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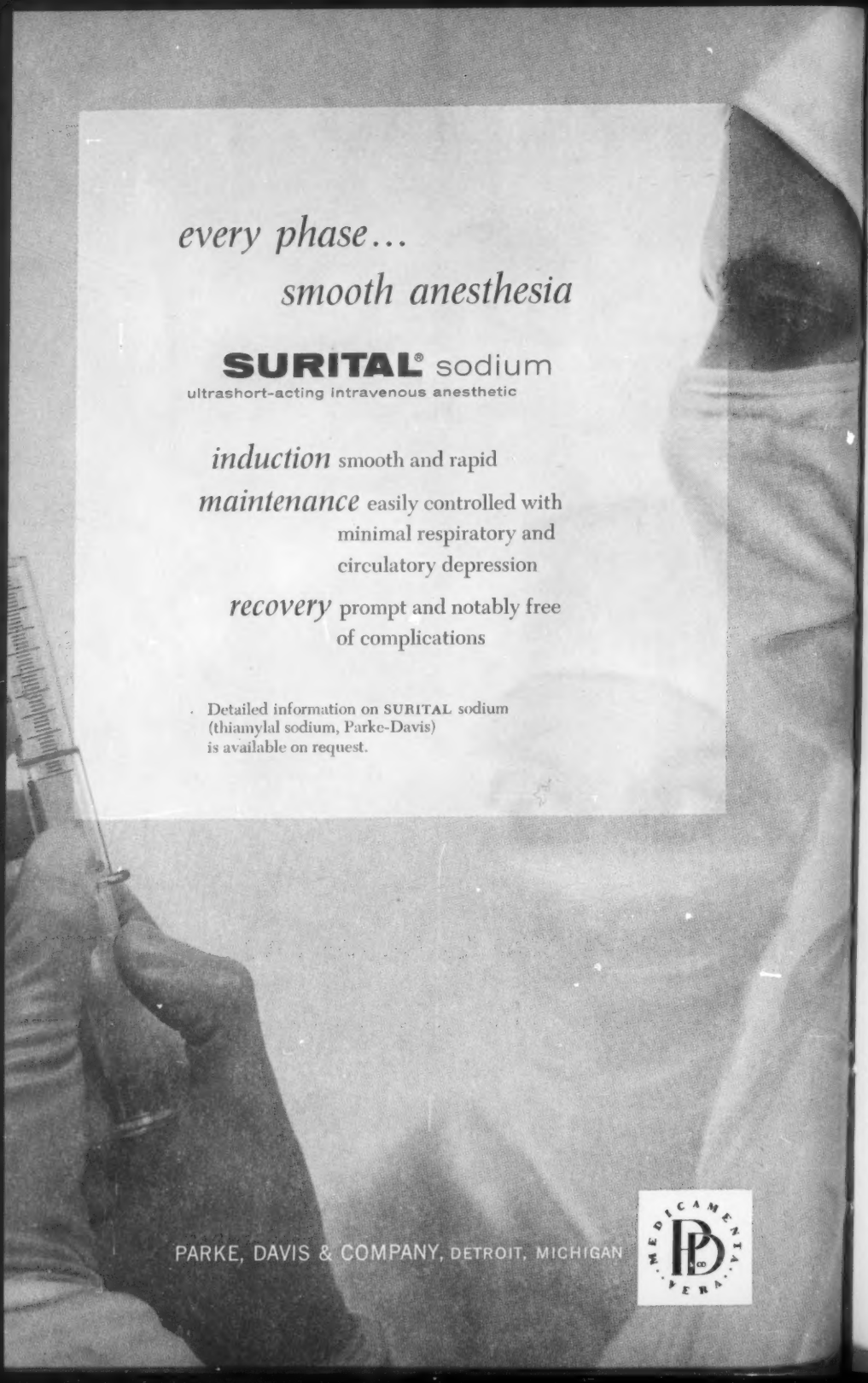
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ORIGINAL ARTICLES

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Incisional Hernia and Abdominal Wall Eventration: A Military Problem

By

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(With fourteen illustrations)

STATEMENT OF THE PROBLEM

INCISIONAL hernia as a result of wound infection, improper wound closure or faulty wound healing and abdominal wall eventration secondary to nerve injury by trauma or an improperly conceived incision, or concomitant with a chronic distending mechanism such as ascites, are considered together herein because the symptoms, findings, course and treatment are similar or identical.

In the military service, such a disabling sequel to trauma or disease is apt to occur in a young and otherwise able-bodied man whose services can be ill spared. Consequently, it seems pertinent to review a series of cases from World War II and from the war in Korea in order to decrease this complication as well as to improve our methods of treatment.

This paper deals with 64 patients treated at Brooke Army Hospital between 1949 and July of 1954, as well as 14 patients treated at Winter General Hospital in Topeka, Kansas, in 1944-45.

PREVENTIVE TREATMENT

In the chaotic conditions of warfare, it is not surprising that wound infections and incisional hernias develop. Indeed, it is more surprising that the incidence is so small. This low incidence is directly correlated with the greatly improved casualty pick-up and the system of therapy which enabled us to finish the war in Korea with a mortality rate of 2.3% for those wounded who lived to reach a Battalion Aid Station. Much thought has been given to the problems of wound infection, wound closure, evisceration and allied subjects, and while a complete discussion is not feasible here, a brief summary of policy may be apropos. This is given in outline form with no attempt to avoid controversial elements.

1. Emergency Management of the Abdominal Wound

a. If viscera are protruding, do not replace them in the abdomen but simply place a dry retaining dressing to prevent further evisceration and to obviate further external contamination.

b. Utilize all accepted modes of resuscitation such as replacement of blood volume by blood, dextran or plasma (in that order of preference), alleviation of pain by intravenous morphine sparingly, nothing by mouth, nasogastric suction if feasible, control wound hemorrhage, etc.

c. Initiate adequate antibiotic therapy at the first possible medical echelon and keep it up.

d. Evacuate the patient to an operative

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treatment facility at the earliest possible moment so that definitive surgery can be performed within four hours if possible, and certainly within eight hours if at all feasible.

e. Transport and operate upon the patient on the original litter to avoid excessive moving of the patient.

2. Operative Management of the Abdominal Wound

a. Do not include the wound of entrance or exit in the exploratory incision, and do not use them as the site for abdominal drains or bowel exteriorization.

b. Do the abdominal operation first and then at the close, debride the wounds of entrance and exit carefully. The only exception to this is that large posterior wounds should be dealt with first.

c. Avoid subcostal, transverse, muscle-splitting and complicated incisions which serve admirably in university practice but do poorly in battle casualty work.

d. Utilize longitudinal, paramedian, muscle-retracting incisions which are readily extended, allow wide exposure, are quickly made, and allow rapid closure. This is somewhat of a compromise measure because transverse incisions give fewer incisional hernias.

e. Close the abdominal incision in layers, ordinarily, but close loosely to permit drainage. Use non-absorbable suture material. Place a drain in the wound rather than in the peritoneal cavity.

f. Close the abdominal incision with through and through wire or heavy silk in cases with gross contamination or where speed is especially important. Allow for wound swelling.

g. Consider leaving the superficial layers open in heavily contaminated cases, for secondary closure.

3. Postoperative Management of the Abdominal Wound

a. Continue good surgical care such as antibiotics, pain relief, fluid, electrolyte and protein replacement.

b. Inspect the wound if through and through closure has been used with a view to loosening the sutures to prevent undue tension and cutting as edema develops.

c. Delay evacuation of the patient 5 to 7 days if at all possible.

It will be noted that the above discussion and policy statements are limited to the abdominal wall for purposes of this presentation. Matters relating to intra-abdominal injury have been avoided as not germane to this paper.

Partial Review of Literature and Discussion of Treatment

That the treatment of incisional hernia has been a perplexing and recurrent problem is evidenced by the voluminous literature on the subject as well as by the wide variety of operative procedures advocated. The following discussion is neither chronological nor complete but is synoptic in character.

Theoretically the simplest but practically the poorest treatment is the dissection of normal abdominal layers with careful layer by layer closure just as if an original closure was being done. First, such a procedure may be impossible without undue tension because of the size of the hernial defect, loss of substance, excessive scar tissue or other factors. Second, it is usually found that multiple gossamer layers result, closure of which is most unsatisfactory from a technical standpoint.

The next obvious step is to consider excision of the "sac" followed by overlapping of the full thickness of abdominal wall for whatever distance is possible without tension. Imbrication from side to side is called the Blake procedure, while overlapping from above downward was described by Mayo. Both of these procedures are suitable for relatively small defects without appreciable loss of substance. Both are ineffectual in large hernias where abdominal viscera have lost the "right of domicile" in the abdominal cavity. Simply bringing together the edges of the full thickness abdominal wall rarely is successful in effecting a cure.

For the larger hernias, either additional extraneous tissue or tissue substitute is necessary if sufficient tissue is not locally avail-

able. A recent and ingenious suggestion is that after reflection of skin flaps a cruciate incision be made to fashion four flaps of whatever tissue is available (subcutaneous, fascia, scar and peritoneum). These four flaps then are imbricated in the same way that the four flaps of a cardboard boxtop are overlapped, using interrupted mattress sutures. This makes four layers of whatever tissue is locally present. The procedure developed by the author, in use since 1945 and not previously presented, will be discussed in a subsequent section.

If insufficient tissue is locally available, a logical thought is of the possibility of transplanting some of the patient's own tissue from elsewhere. Muscle flaps have been used with poor success. It should be obvious that muscle functions only by active contraction which is intermittent. Constant contraction is impossible because of the fatigue factor and it should be recognized that muscles usually are protected by resistant fascia to prevent overstretching. Muscle cannot be relied upon to repair a defect on which there is tension such as intra-abdominal pressure. Skin has been used in the form of dermis grafts but buried skin tends to form inclusion cysts and anyone who has become obese knows that skin stretches. Obviously, then, if autografting is to be used, white fascia is the only suitable substance. Such fascia has been used as strips from the rectus sheath or as patches or flaps from the rectus sheath or fascia lata of the thigh. Gallie was the principal exponent of the use of fascial strips as broad sutures to lace the line of closure. These may be free grafts or they may be left attached at one end to the rectus sheath. In either event, the usefulness is rather limited and acceptance has not been general. The next step is to utilize fascia in the form of a patch, sheet or flap, originally as a free graft or on a pedicle from the rectus sheath. In the days before nonabsorbable suture was widely used and before antibiotics were available, such fascial grafts were followed in a discouragingly high number of cases by infection and slough of the graft. This led Wangensteen to advocate the use of the fascia lata of the thigh as a pedicle graft turned up with the tensor fascia lata muscle as a base, bringing the whole flap up through a subcutaneous tunnel to the operative site. By this procedure a hugh defect extending to the rib margin could be covered, and Wangensteen felt that preservation of the blood and nerve supply to the fascia would reduce the incidence of failure from slough. However, the blood and nerve supply to fascia certainly is minimal, and with advances in surgical technique, the maintenance of a viable pedicle was not proven necessary. It long had been recognized that accumulation of blood or fluid beneath the fascial graft contributed in high degree to failure of the graft, and adaptation of technique from plastic surgery largely solved this problem. The solution is by multiple small slits in the graft to allow escape of trapped fluid accompanied by multiple small stitches to "tie down" the graft to deeper structures.

Homografting has not been successful even with the highly touted ACTH, and even in burns, homografted skin simply dissolves away in about three weeks' time. To my knowledge, no success has been had in repair of incisional hernias using homograft material.

On the other hand, heterografting of preserved ox fascia or suture by kangaroo tendon has been advocated in the past by some. It seems obvious that this foreign material simply acts as a temporary splint until scar tissue replacement can be accomplished, and this form of therapy has little to recommend it now.

Finally, various foreign bodies, other than tissue, have been employed to bridge tissue defects. One of the earliest of these was sponge rubber as advocated by Fieschi who sutured this material into inguinal and incisional hernial defects in the manner of an obturator. He reported that fibroblasts grew into the interstices of the rubber and that over a period of 25 years the rubber was completely replaced by scar tissue. This method, although successful in his hands,

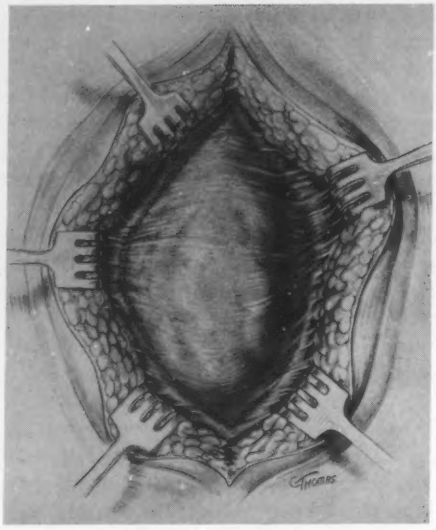

FIG. 1. Skin flaps are reflected medially and laterally until fascia is encountered. The peritoneal cavity then is entered either medially or laterally, leaving the "sac" for subsequent use.

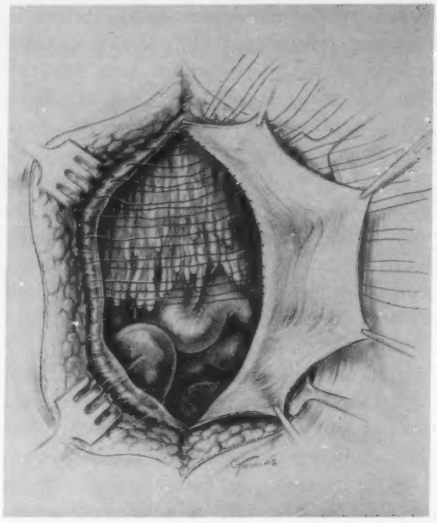

FIG. 2. Edges of good tissue are overlapped if possible or at least brought together by interrupted mattress sutures of #0 silk.

was not generally accepted. In the search for a more inert substance, tantalum, which came into vogue as a plate to replace skull defects, and stainless steel, which was widely used in orthopedic work, both were used in the form of a wire mesh to cover hernial defects. Advocates of this method sometimes tend to be enthusiasts so that any critical statements are dangerous. However, the wire mesh may crinkle and crackle in the abdominal wound, presaging an eventual dissolution of continuity of the wire by repeated bending. Some patients complain that the subcutaneous broken wire ends are pain points. The matter of recurrence of hernia is difficult to assess in cases where wire mesh has been used and advocates like to speak of "false recurrences" around the edges of the mesh. It would seem, however, that if hernia develops after repair by whatever method, it is a "recurrent hernia." This seems to be a matter of semantics. The author has seen only one case in which there seemed to be a clear-cut need for tantalum mesh repair. This was a North Korean POW who had lost the entire abdominal wall from rib mar-

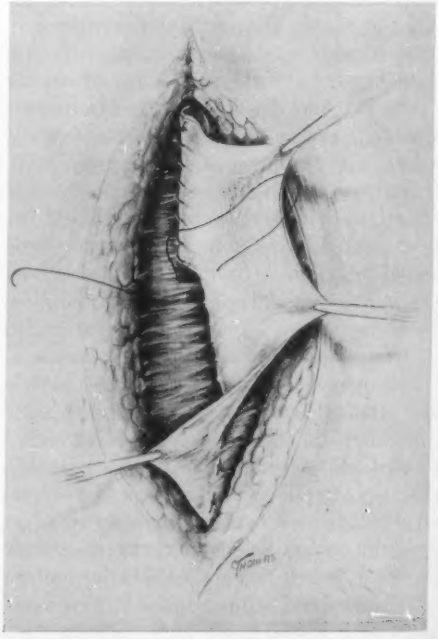

FIG. 3. When the mattress sutures are tied, the intervening defects are obliterated by a continuous suture of chromic #0 catgut.

gins to pubis and from flank to flank. Removal of the retaining gauze dressing allowed complete visualization of the entire abdominal contents, covered by a thin layer of fibrin and granulation tissue. There was no skin available for flaps and the only feasible therapy seemed to be a large sheet of wire mesh which could fill by granulation tissue and over which split thickness skin grafts might be applied. This patient was seen on an inspection trip and no follow-up was possible.

Most recently, nylon cloth has been advocated as a sheet graft to cover hernial defects. Some nylon cloth is strongly reactive in tissue, producing a dense, fibrous reaction, while other nylon is quite inert. This fact was discovered in using nylon cloth tubes to bridge aortic defects. If a heavy cloth which is not too reactive can be found, it may obviate some of the disadvantages of the more rigid wire mesh. Sufficient time has not elapsed to evaluate the method as yet.

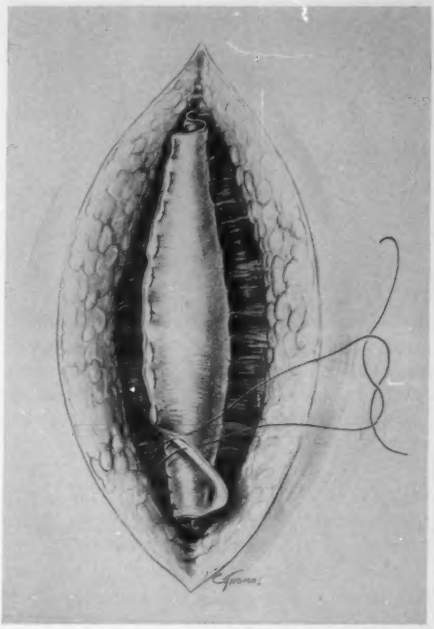

FIG. 5. Here two layers of imbrication are shown in addition to the original layer of mattress sutures. In cases where there is less firm abdominal wall tissue, the flap is laid down to cover a broader area.

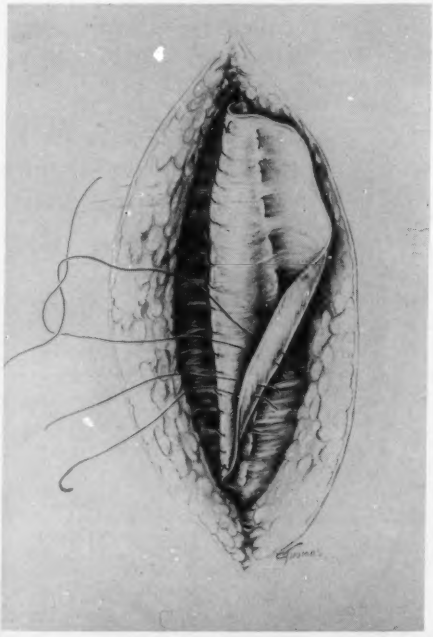

FIG. 4. The flap of peritoneum, scar, thinned-out fascia and some subcutaneous tissue is laid down in two or three layers over the repair and is retained by interrupted silk sutures.

METHOD OF TREATMENT ADVOCATED

The method of surgical repair of incisional hernia or abdominal wall eventration devised by the author over a period of years has been used in 41 of the patients included in this series. The method evolved because of dissatisfaction with the Blake and Mayo repairs in the large defects being encountered and because removal of fascia from the thigh seemed more radical than warranted by the usual circumstances, although no bad results were had with fascia lata. The author was struck with the fact that although there was a dearth of available tissue for repair, the so-called "sac" with its peritoneum, scar tissue and thinned-out fascia and subcutaneous tissue was discarded. The method finally devised is shown well in the accom-

FIG. 6. This patient had a large incisional hernia for which he had refused treatment for many months, hoping to be repatriated. Finally, when the hernia had reached the size shown, he decided to accept operation.

panying figures (Figure 1, 2, 3, 4 and 5) and essentially is the use of all tissues locally present, as a flap which is imbricated into as many layers as can be made without undue tension. Sometimes the abdominal wall is imbricated in a Blake repair first, with the "sac" then being folded and sutured back and forth over it. Sometimes it is possible only to bring the edges of the abdominal wall together without overlap and then to make two or three layers of "sac" over this, while in a few instances it was totally impossible to get the edges of good tissue together at all and here as snug a closure as possible was attained and then the overlapping layers of "sac" were used for reinforcement. The advantages of this method are that no foreign body is introduced, no extensive dissection in the thigh is necessary, the procedure is tailored to fit the defect and the circumstances, the procedure is simple, is of short duration, and the end results since 1945 have been entirely satisfactory.

PRESENTATION OF DATA

In this paper, 78 cases of incisional hernia or abdominal wall eventration are presented. Sixty-four patients were operated upon at Brooke Army Hospital between 1949 and July of 1954. Thirty-two of these patients were operated upon by the technic described by the author. Fourteen battle casualty cases operated upon by the author at Winter General Hospital in Topeka, Kansas, in 1944-45 are added because they illustrate certain points in the evolution of the technic eventually perfected.

In the Winter General Hospital series (Table I) of 14 patients, six patients had a simple Blake repair with imbrication of the

TABLE I

WINTER GENERAL HOSPITAL SERIES

14 Cases
1944–45

	Original Operation	Type of Repair	Remark
1	Abdominal GSW	2-layer free fascia graft and edge-to-edge repair	RUQ
2	Abdominal GSW	Blake—4 layers	
3	Abdominal GSW	Blake—3 layers	LIQ
4	Abdominal GSW	Blake	
5	Abdominal GSW	Pedicle fascia lata graft over edge-to-edge repair	
6	Abdominal GSW	Blake—2 layer	
7	Abdominal GSW	Blake	Second repair
8	Abdominal GSW	Blake and fascia lata free graft	
9	Abdominal GSW	Blake	
10	Abdominal GSW	2-layer free fascia graft and edge-to-edge repair	Fourth repair
11	Abdominal GSW	Blake	
12	Abdominal GSW	Blake	
13	Abdominal GSW	Blake and pedicle fascia lata graft	Tight pedicle later divided
14	Abdominal GSW	Blake	

full thickness of abdominal wall. In the other eight patients, tension was so great that either imbrication was not possible or it was felt that additional strength was needed. In two patients a pedicle graft of fascia lata on the tensor fascia lata muscle as a base was used to cover the repair, bringing the flap up through a subcutaneous tunnel in the inguinal region (Figures 6, 7 and 8). The preparation and use of this pedicle fascia graft is a complicated and time-consuming procedure which is of questionable superiority over a free graft. In one of the pedicle cases the pedicle was readily palpable in the groin, and as healing progressed, the pedicle became quite tense, limiting extension at the hip. Through a short incision under local anesthesia, the pedicle was divided without in any way changing the hernia repair.

FIG. 7. In this case the defect edges could be brought together but could not be imbricated and the sac imbrication had not yet been devised. Consequently, a fascia flap from the thigh, turned up on the tensor fascia lata muscle as a pedicle and tunneled under the skin in the inguinal region, was used to overlay the repair. The tense pedicle under the inguinal skin is shown. This subsequently was divided.

FIG. 8. In this large lower midline incisional hernia, repair by bringing the defect edges together was accomplished and then a pedicle graft of fascia lata from the thigh was turned up as in the previous case.

Following this, in three cases, the fascia lata was used as a free sheet or patch graft to cover the repair, sometimes folding the fascia to make two layers (Figures 9, 10 and 11). At this point, it was noted that the "sac" material could be made into several layers, and in the next three cases, such a procedure was used, substituting the "sac" for fascia transplant and making as many as four layers by folding the redundant tissue back and forth over the area of weakness. No long time follow-up was possible in these cases but the immediate and short time results were perfectly satisfactory. This briefly summarizes the origin of the type of repair advocated for incisional hernia, and this has been enlarged to include abdominal wall eventration as will be mentioned subsequently.

The sixty-four cases in the Brooke Army Hospital series have been analyzed as well as available data permit, with some interesting findings (Table II). Of the sixty-four patients, 56.25% (36) were male and 43.75% (28) were female. The age range of the patients was from 7 to 75 years with an average of 44. The interval between original operation varied between 4 months and 25 years, with an average duration of 3 years. As regards the original operative procedure, Table III shows that appendectomy and cholecystectomy still furnish a large case group, making up over a third of the total.

FIG. 9. This patient, an American Indian, had a Blake repair of incisional hernia and while at home on furlough in the Dakotas he entered a rodeo, was thrown from a horse and disrupted his repair.

In each instance, the herniation after appendectomy followed wound infection or a longitudinal incision. In each case the original cholecystectomy had been done through a longitudinal incision, and in every instance the gynecological procedure had been carried out through a lower midline incision. It is rather generally appreciated now that paramedian rather than midline incisions are preferable and that oblique or transverse incisions develop herniations rarely unless there is an unusual complication. In the sixty abdominal incisions in the Brooke series and

TABLE II

BROOKE ARMY HOSPITAL SERIES

64 cases—1949-54

Sex Distribution

Male		Female	
Number	*%*	*Number*	*%*
36	56.25	28	43.75

Age Range

7 years to 75 years
average 44

Interval Between Original Operation and Hernia Repair

Range 4 months to 25 years
average 3 years

Distribution by Year of Repair

1949	6 cases
1950	16
1951	10
1952	9
1953	15
1954 (6 mo.)	8
	64

TABLE III

BROOKE ARMY HOSPITAL SERIES

64 cases—1949-54

Original Operation or Disease Resulting in Hernia

	Number of Cases	*% of Total*
Appendectomy	12	18.75
Cholecystectomy	12	18.75
Gynecological Procedure	10	15.63
Abdominal Gunshot Wound	9	14.07
Gastric Resection	5	7.82
Pelvic Abscess Drainage	3	4.71
Sigmoid Carcinoma Resection	3	4.71
Colostomy Closure	3	4.71
Nephrectomy	2	3.13
Intestinal Obstruction	2	3.13
Subdiaphragmatic Abscess Drainage	1	1.56
Suprapubic Prostatectomy	1	1.56
Chronic Ascites and Cirrhosis	1	1.56
	64	99.9%

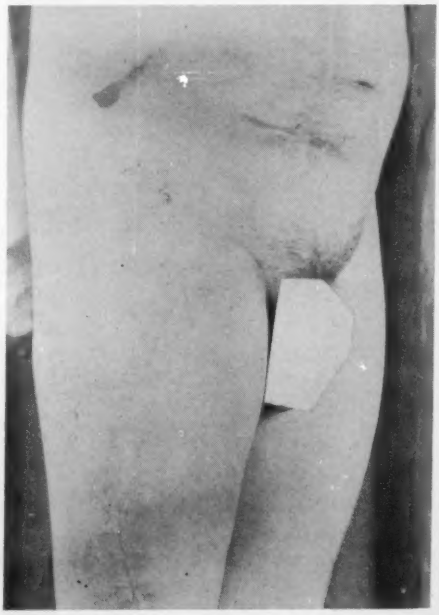

FIG. 10. Because of the evident lack of protection that this patient would give his repair, at his second operation a free fascia graft of fascia lata was used, folded into two layers to cover his imbricated repair.

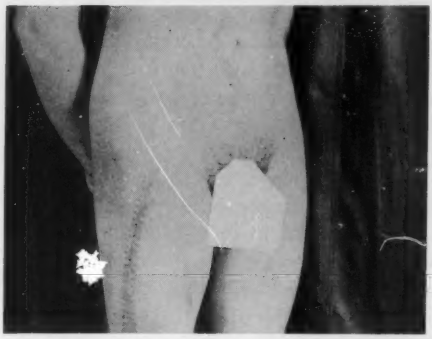

FIG. 11. This patient had three unsuccessful attempts at incisional hernia repair elsewhere. Because of this history and because tension prevented more than an edge to edge approximation, a free graft of fascia from the thigh was used, folded to make two layers, to overlay the repair.

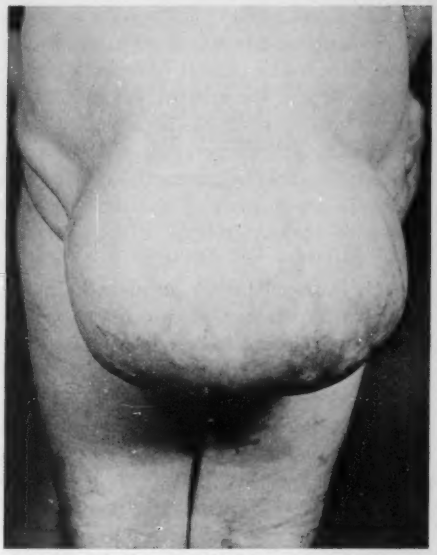

FIG. 12. In this patient with chronic ascites from portal cirrhosis, two huge femoral hernias and an umbilical hernia have been repaired. This photograph, taken 18 months later, shows the massive disabling eventration of the abdominal wall, with prominent veins and chronic skin ulceration. Through a transverse incision from flank to flank a four-layer, full thickness imbrication from above downward was done with unexpectedly good result.

fourteen abdominal incisions in the Winter series, only two herniations occurred through an oblique subcostal incision and all the rest were longitudinal. Both of these subcostal incisions were bilateral ones for gastrectomy. In one instance there was a severe wound infection, and in the other, in a very large patient, there was atelectasis with severe coughing and partial wound disruption. Here it should be emphasized again that while there is a definitely lower incidence of herniation through transverse and subcostal incisions, longitudinal paramedian incisions still are preferable in battle casualty work.

In five patients in the Brooke series, there was eventration of the abdominal wall rather than herniation. In one patient (Figure 12), portal cirrhosis with massive ascites over a long period of time favored the development of two huge femoral hernias and a large umbilical hernia. Eighteen months after these had been repaired, the patient returned with a massive eventration of the entire abdominal wall of such extent that after paracentesis the mass hung down sufficiently to cover the genitalia. There was chronic ulceration of the skin over this protuberance. Through a transverse incision, the full thickness of wall was imbricated to form four layers which resulted in a flat abdomen. The two patients in the series with nephrectomy as the primary operation (Figure 13) developed eventration as a result of destruction of the nerve supply to the muscles of the flank. Both of

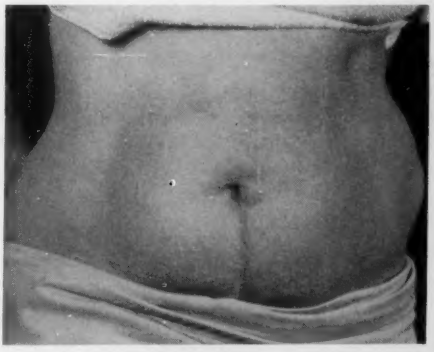

FIG. 13. Muscle denervation at nephrectomy resulted in a disabling, bulging flank and a poorly conceived repair resulted in the defect shown. Full thickness imbrication from above downward removed the disability.

these were repaired by full thickness imbrication from above downward, suturing the inferior flap to the costal margin and the superior flap to the area of the iliac crest. Short term follow-up has been satisfactory. The fourth patient received a thoracoabdominal shell fragment wound in Korea, resulting in eventration of the flank on the right with marked prolapse of the liver and severe disability. In addition, there was a ventral incisional hernia through the longitudinal incision. In this case the incisional hernia was repaired by the imbrication technic and after about six weeks, the eventration was corrected by imbrication of the lateral wall from above downward. Both of these procedures were successful and the patient was returned to active duty as a hospital ward technician. The fifth patient was a young woman who had been operated upon elsewhere with a diagnosis of appendicitis, an atypical McBurney incision being used. At operation it was decided to do a cholecystectomy and the incision was extended up the lateral border of the right rectus muscle to the rib margin and thence to the midline. This improperly conceived incision effectually denervated the rectus muscle so that a massive eventration developed. This was aggravated by a chronic bronchiectasis with severe productive cough. This situation was corrected by imbrication of the full thickness of abdominal wall to form three layers. At this procedure it was found that the right rectus muscle was so atrophic as to be represented only by a ribbon of muscle a few millimeters in thickness. This graphically illustrates the damage that can be done by a poorly conceived incision.

Complications and Results

In one patient who had a large incisional hernia, there was infected ulceration of the skin over the apex of the mass (Figure 14). This was treated by saline soaks and local antibiotics until healing and at operation especial care in skin preparation was taken. Despite the precautions, a severe wound infection developed after hernia repair and recurrence promptly ensued. In one of the patients who had a subcostal incision for gastrectomy with infection and hernia development, hernia repair was followed by infection and recurrence of the hernia. This time several months were allowed to pass before repair was attempted, with a successful outcome. In the other patient who developed herniation in a subcostal incision, the original repair was a technical failure because dissection and layer closure was injudiciously attempted. His second repair with the advocated imbrication technic was successful. Although followup is short and admittedly incomplete, these three recurrences are the only ones known to have developed.

Occasionally there has been a small hematoma in the wound and frequently there is some temporary fluid accumulation. Closure always is accomplished with a Penrose drain beneath the skin flaps and in no instance has fluid accumulation been a significant prob-

Fig. 14. This large incisional hernia followed intestinal obstruction with perforation and a massive wound infection in a patient who almost succumbed to peritonitis. Some six months later the hernia had progressed to this size and there was skin breakdown over the ventral aspect. Despite precautions, after hernia repair wound infection developed and recurrence promptly eventuated.

lem. Supporting binders are not used postoperatively, retention or stay sutures are not employed, and the patients get out of bed on the day after operation, just as do all operative cases. Nasogastric suction is used until peristalsis has returned and full feeding is started as soon as the tube is removed.

Summary and Conclusions

1. Seventy-eight patients who had incisional hernia or abdominal wall eventration are presented.

2. Policy regarding emergency management, operative management and postoperative care of abdominal wounds is discussed from the standpoint of prevention of later herniation.

3. A partial historical review of types of incisional hernia repair is given.

4. A satisfactory method of repair relying on imbrication of locally available tissue to form two to four layers is described and has been used successfully in over forty cases.

5. Longitudinal incisions, although advocated for battle casualty work, produce by far the majority of incisional hernias, whereas subcostal or transverse incisions rarely produce an incisional hernia unless there is a complication such as severe wound infection or dehiscence.

6. It is emphasized that abdominal incisions which denervate muscles cause abdominal wall eventration which is disabling.

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European Outbreaks of the Far-Eastern (Korean) Type of Epidemic Hemorrhagic Fever (EHF)

By
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THE Korean Conflict brought the Western World in close contact with various exotic diseases. Among these ailments of the Far East there was a strange affection which, owing to its peculiar symptoms and epidemiologic character, attracted the attention of medical men, military administrators and governmental health organizations all over the world. The Japanese, who had already recognized the disease in 1936 during their occupation of Manchuria, called the sickness "epidemic hemorrhagic fever."[17] The American Armed Forces, which were first attacked by the epidemic in Korea during the summer of 1951, accepted the term sponsored by the Japanese literature, but the western medical profession remained in a puzzle as to the true nature of the disease since the scanty information in the medical journals of Japan and the few original Korean observations did not help a speedy research. In December 1951 I pointed out that there was a sizeable amount of earlier Russian literature in existence on the same epidemic fever, and I proved that the Korean-Manchurian "epidemic hemorrhagic fever" is identical with the "endemic hemorrhagic nephroso-nephritis" of the Siberian Far-East.[15] Thereafter, numerous articles were written on the many aspects of this new virosis, and many epidemiological and clinical details were added by western authors to the basic data revealed in 1951.[22,23]

In all subsequent studies, epidemic hemorrhagic fever was shown as a disease endemic in the Far-Eastern parts of Asia only, especially in the countries along and near the Lower Amur River and its tributaries.[12,18] In recent years and months, however, outbreaks of the Far-Eastern type of epidemic hemorrhagic fever have been reported from several areas of Europe, including South-European Russia, Bulgaria, and Hungary. These reports authentically prove that the epidemic hemorrhagic fever of the Korean variety is perhaps a global disease. The Hungarian epidemic also shows that the accurate diagnosis of a strange spreading disease in a country partly depends upon how well-versed are the physicians in foreign medical literature.

It is my intention to report briefly on the outbreaks of EHF, genuine or otherwise, that occurred in European countries in the last few years. I wish to call attention especially to observations or interpretations which are different from those already found in the American literature of EHF. (For an outline of the basic knowledge on EHF, reference is made to p. 276-284, vol. 110, Military Surgeon, April 1952).[16]

1. OUTBREAKS IN SOUTH-EUROPEAN RUSSIA

In Russia, there are several types of epidemic hemorrhagic fever, but only the Far-Eastern type produces urinary syndromes and only this type is known as hemorrhagic nephroso-nephritis. This is the type we are now concerned with. In the latest Russian literature the disease is now being classified as one of the *zoogenous hemorrhagic fevers* (Avakjan & Lebedev, 1955).[9] (According to definition, a "zoogenous disease" is one which requires a direct contact either with the virus-carrier, a rodent, or with articles contaminated with the rodent's excretions.)

Since about 1946, local doctors of the Southern area of European Russian have recognized an endemic disease of vague etiology. It was first thought to be toxic grippe, or an abortive form of exanthematic typhus, etc. In 1949-50, the Neurological Institute of the Academy of Medical Sciences of Soviet Russia dispatched an expedition

under the leadership of Avakjan and Chumakov to study this endemic ailment. Reznikov, a member of the medical expedition, showed that the disease is clinically identical with hemorrhagic nephroso-nephritis (which is the Far-Eastern type of EHF).[9]

The disease occurs among rural population, and 71% of the sick are found in the kolhoz. Many of the sick are thrashers (40%) or workers with dusty grain; many (50%) tend to livestock or are engaged in other agricultural work. Most of them are of the working age-group while children and older people rarely become sick. An outbreak of the epidemic usually starts in September, increases in the first ten days of October, and reaches its peak in December. It ceases in February, though sporadic cases also occur in the summer. For this reason the epidemic is called "wintry hemorrhagic fever" (zimnaja hemorragičeskaja lihoradka).[9]

It is suspected that this epidemic is caused by a virus very similar or identical to the virus of the Far-Eastern type of EHF. The carriers are such small rodents as Microtus arvalis, Apodemus agrarius, Micromys minutus, etc. The mechanism of infection is unknown.

It should be mentioned here that Solomin (1953) reported cases of the Far-Eastern type of EHF which occurred among lumbermen in the foothills of the Ural Mountain.[21]

2. Outbreaks in Scandinavia

From Norway, Sweden and Finland several strange epidemics of a peculiar disease of the kidney have been reported since 1951. The disease, which is lately known as "Myhrman-Zetterholm epidemic nephropathy,"[1] has much similarity with the Far-Eastern type of EHF. Myhrman himself, the original describer of this affection, thought that the source of infection is a rodent, as it is in EHF.[19] Yet, there are many clinical differences which set the Norwegian outbreaks apart from true hemorrhagic fever, such as the absence of bleeding, the mild course, the normality of blood-count, the low blood-pressure, and the presence of disturbed liver function as indicated by the thymol turbidity test.[6] Owing to its mild course, epidemic nephropathy could not be adequately studied by pathologists. It is therefore only an assumption that some of the Scandinavian epidemic nephropathies might have been cases of EHF.

3. Outbreaks in Jugoslavia

An epidemic renal disease was also rampant in Jugoslavia in 1950 and the subsequent years. This ailment was originally described as a viral glomerular nephritis (Ristić, et al.),[20] but lately it was diagnosed as acute interstitial nephritis of unknown etiology (Radoševič, 1954),[1] to be identical with the Norwegian epidemic disease. The Jugoslav outbreaks are easily dismissed from further consideration since the main symptoms of the disease are entirely different from those of EHF. There is again no bleeding, and no anuria. The infection can be easily transferred to guinea-pigs, rabbits, dogs, cats, by injecting the patient's urine or blood into the animals.[6] The virus of EHF cannot be thus transferred.

4. Outbreaks in Bulgaria

Several recent articles in Bulgarian medical journals discuss certain native pupuric diseases under the vague term of "hemorrhagic fever" (Nekljudov, 1952;[3] Mitov, 1953).[4] A report of Dimov (1955)[2] states that cases of such disease occurred at various points of the country. About 16 cases have been observed so far in Starozagorsk, Poljanovgrad, Razgrad, Tolbuhinsk, and Kolarovgrad where the mortality rate was high.[2] From the Bulgarian description, the nature of the local epidemic seems to be other than the Far-Eastern type of hemorrhagic fever.

5. Outbreaks in Hungary

This cursory outline leads us to the epidemics of hemorrhagic fever that occurred in 1952, and especially from June to September in 1953 in Hungarian troops camping at different parts of Hungary. The Hungarian

outbreaks of EHF were very carefully studied by competent pathologists, epidemiologists and clinicians who recently (1955) reported their findings[5, 6, 14] in a series of articles. The Hungarian Army medical officers acknowledge that, in establishing the final diagnosis, they were greatly guided by the descriptions they found on EHF in the American and Russian literature. After all, epidemic hemorrhagic fever had never been said, or known, to occur in Europe. Their accurate analysis of the epidemiological and pathological material makes *the Hungarian epidemic of 1953 the first authentic outbreak of the Korean type of hemorrhagic fever in Europe.*

Before the 1953 summer epidemics, a sporadic case of EHF was observed at a regional Army hospital in the month of September, 1952.[6] The patient died at the Urological Clinic, and correct diagnosis was the result of later retrospection. This shows, undoubtedly, that the virus of EHF had been already present on Hungarian soil in 1952.

Epidemic hemorrhagic fever produced four outbreaks at four different sites in Hungary in the summer months of 1953.[14] Three outbreaks occurred in Northern Hungary, which is mountainous and wooded, and one epidemic happened in hilly Transdanubia. Each of them affected a small group of military personnel living in camps. The total number of epidemic and sporadic cases in Hungary was 58.

The first outbreak of the disease lasted from 10 to 22 June, 1953. It attacked eight persons in the military camp that was situated in a valley which had a north-south direction and was covered with a thin oak-forest. On June 9 and 10 there was a heavy rainfall which caused a small brook near the camp to jump its banks and to flood a part of the encampment, including the well that supplied the drinking water. For this reason it was natural to assume at first that the small epidemic was leptospirasis. Only the renal symptoms contradicted such a diagnosis. Then, the serological tests, which were carried out on blood specimens, sent to the Microbiological Institute at Budapest, disproved the possibility of a leptospira epidemic.[6] At this time, the medical literature was searched, and the investigators came across the reports of epidemic hemorrhagic fever.[14] These reports made them admit the possibility that the outbreak was caused by the virus of EHF. Prepared by reading the articles on the Far-Eastern epidemics, the Hungarian military surgeons could promptly establish the nature of the subsequent outbreaks of the disease in other military camps.

The second outbreak occurred between June 27 and July 16. It produced 21 military cases. The camp was situated on the north-eastern slope of a mountain. It was several miles long, but its eight sectors were in close proximity and under similar sanitary provisions. The area was covered by a thin forest of deciduous trees where mice and ticks were in evidence. All 21 patients were living in the same sector of the camp, but only five of them had signs of tick-bites. All were serologically tested for leptospirasis, but all tests showed the absence of leptospira agglutinins. When the military unit left the camp, the area was lavishly spread with insecticide and cresol to reduce the number of ticks. In the units that later occupied the same camp nobody became sick.[14]

It is said that, in the neighborhood of this camp, outbreaks of some obscure febrile disease had been observed in the summers of previous years. The disease usually had lasted a few days and produced but mild symptoms. Whether these former small epidemics were caused by Leptospira or by the virus of EHF, it is now hard to say. While the above mentioned second epidemic of EHF was observed in the military camp, three other cases were also detected in civilians who have been working in the same forest. Two further civilian cases, observed in other parts of Hungary, could be also traced to the same camp. Thus, the total number of sick was 26 in the second outbreak of EHF.

The third epidemic[4] occurred in Western Hungary, in Transdanubia ("Dunántúl"), between July 17 and August 6, in a camp

which was located in a hilly and wooded country and was covered with deciduous trees. Only a few mice and very few ticks were detected in the camp area. Four soldiers became sick, three of them living close together in the same sector of the camp. Two of the patients died.

The fourth outbreak of EHF lasted from 3 to 28 September, and it occurred in a camp located in a valley of mountainous North Hungary and covered by a dense birch-forest. The area of the camp was, however, cleared for the tents. Sixteen cases of EHF developed within a period of 2 weeks, and two of the patients died. All attacked soldiers, but one, were living in the same sector of the camp. There was one particular tent where five soldiers became sick (two of them died). One of the soldiers showed signs of peptic ulcer and had to be sent to the hospital. While being hospitalized, he began to manifest the typical symptoms of EHF.[14]

The camp where the fourth outbreak occurred was heavily infested with mice. It was found that under each tent where the soldiers were attacked by the epidemic there were burrows of the mouse *Apodemus flavicollis*. The mites of this species were identified as members of the *Laelaptidae* family. Many mice were caught for pathological research, but the animals did not have any noteworthy change in their organs. No mites were found on the birds collected in the camp area. Experimental inoculations of cats and horses did not make these animals sick in an respect.[14]

As mentioned before, the Hungarian military surgeons and the medical officers of the State Public Health Institute made extensive clinical, epidemiological, bacteriological and pathological studies of these small epidemics. There can be no doubt that they were witnessing authentic outbreaks of the Far-Eastern type of epidemic hemorrhagic fever. Biopsy was carried out in 4 cases, and six other victims were examined post-mortem.[5] The pathological changes were described by I. Kiss and Gy. Dévai, and their description is very similar to other reports published in the world literature on EHF.[5]

Among the Hungarian victims of the disease one died three hours after the onset of symptoms. This seems to be the *first fulmitant case* of epidemic hemorrhagic fever ever published.[5] In this case, the spleen was enlarged to three times its natural size, and the kidneys showed the typical changes of EHF, though there was no time for the development of complete renal insufficiency and uremia. The cause of sudden death was considered to be toxic shock. Another patient died 12 hours after the onset of mostly gastrointestinal symptoms, and the diagnosis of EHF was made retrospectively. Four other deaths resulted from uremia.

The Hungarians found that biopsy of the renal cortex was helpful in reaching a correct diagnosis. The biopsy revealed the same changes in the renal tissue that were found at autopsy of the dead. Three of the four biopsied patients survived. This fact would indicate that even the apparently grave and advanced renal changes are reversible in this virus disease. It is still too early, however, to say that the renal function will be completely restored in EHF. Continued medical surveillance of the surviving victims of the disease is, therefore, essential.[5]

The Hungarian pathologists consider that the round-cell infiltration which is found at the cortico-medullary junction in the kidneys of EHF patients is a morphological sign of viral action. They feel that there are many problems which this disease still poses to the pathologist. A detailed study of the changes in the central nervous system is especially desirable. In their cases, they saw dilated capillaries, extensive pericapillary extravasates and edema in the brain. In two instances they detected degeneration of nerve cells, neuronophagia, and some slight accumulation of glia in the hypothalamus and the central pedicle.[5]

The EHF epidemics in Hungary also add various useful observations to our knowledge of the clinical picture of the disease. Some significance is attributed to the vague muscular aches which at the prodomal stage of the

disease may develop in the abdominal wall or in the lower back, and may cause difficulty in diagnosis (appendicitis. cholecystitis, kidney calculus).[6] The vivid redness of the patient's face, sometimes of his neck and of the upper part of his chest, is unique, and the congestion of the conjunctivae is a persistent symptom. Petchiae are frequently seen in the armpit. The heart is usually not seriously damaged, and the electrocardiograms do not suggest any grave myocardial injury. There may be depression of the ST interval and flattening of the T waves, but these changes subside mostly in a few weeks. The 7-8 cm long, one-half cm thick macaroni-like urinary casts (first described by DUNAEVSKY[17]) are considered characteristic for EHF at the peak of oliguria. Blood sedimentation helps to differentiate EHF from leptospirasis; sedimentation is normal in EHF, and it is always elevated in leptospira infections.

The treatment of EHF is still symptomatic. The Hungarian Army used no specific therapy in the described epidemics.[6] The patients were given large amounts of fluids, and diuretics. In anuria, some patients were subjected to decapsulation of the kidney, though it is a very risky procedure owing to the tendency to shock and the great fragility of the blood vessels. The anuric or oliguric stage of EHF is the most promising field for the application of artificial kidney.

The Hungarian observers found that Cigankov's earlier classification (1941) of epidemic hemorrhagic fever into 4 clinical forms is symptomatic and defective (for this classification see Military Surgeon, 1952, 110: p. 282).[16] In place of the 4 groups the Hungarians propose only two forms: 1) cases with mild or no renal symptoms, 2) cases with renal involvement, and much albuminuria.[6] According to this classification, the 1953 epidemics in Hungary produced 16 cases of Group 1, and 42 cases of Group 2. The so-called grippo-typhose and mild forms (Group 1) can be recognized only within an outbreak of several cases, but not in sporadic instances. The Hungarian clinicians repeatedly quote my lines,[5, 6, 16] and they state that the Hungarian epidemics of EHF also prove the existence of the epidemiologically important abortive forms of the disease.[6]

Concerning the search for the virus of EHF, the efforts of the Hungarians were also fruitless. They are thus not better off than the Russian and American investigators. The global virological research into epidemic hemorrhagic fever can be therefore summarized as follows: 1) unknown virus, 2) unknown vector and host, 3) unknown portal of entry, 4) unknown route of spread, 5) unknown immune biology. At the Virology Department of the Hungarian State Institute of Public Health, attempts have been made to isolate and culture the virus, on brain tissue and on chicken embryoes, from feces, blood and throat-washings. All attempts resulted in failure.[6] But this failure is not surprising. The Dean of the Harvard School of Public Health confessed similar failure in his Annual Report for 1954 (Publ. 1955): "The study on hemorrhagic fever, initiated July 1951 was officially terminated June 1954 . . . Inoculation . . . resulted in no significant infection related to hemorrhagic fever."[7]

One may wonder whether the virus of epidemic hemorrhagic fever had been present in the depth of Hungarian forests long before the appearance of the 1953 epidemics. A sporadic instance of EHF infection certainly occurred late in 1952 in Hungary. Who knows how many earlier sporadic cases of the virosis had been put under other diagnostic labels in the civilian hospitals of Hungary? Only the pioneer and military types of group life, with their penetration into virgin forests, are apt to elicit small outbreaks of this peculiar virosis whose birthplace is in the bosom of Nature where mice, mites, and microbes had been living in undisturbed symbiosis for centuries.

The recent Russian medical literature[8, 10, 11] puts great emphasis upon the study of these natural birthplaces or natural centers of epidemics and epizootics ("prirodnaja očagovost"). The Russian doctrine of "natural

centers of human diseases" in the virgin areas of Nature is a development of the last few years. The hypothesis was discussed at a joint conference of the Russian Public Health Ministry and of the Epidemiological Institute of the Medical Academy in April 1954.[8] The idea of such "birthplaces of viruses" in Nature was further promoted by the Russian Ministry of Agriculture, several regional academies of science (e.g., Kazakhstan), and by additional meetings in the satellite countries.[13] At these various meetings it was generally assumed that there are certain uninhabited areas where pathogenic agents of human diseases find a particularly favorable environment for their existence, propagation and further evolution. According to Russian authors, the Far-Eastern type of epidemic hemorrhagic fever is also one of the many human diseases whose virus is born in Virgin Nature.[9]

It is hoped that the new Rusian doctrine is is not the sign of a hopeless resignation of virological research, and that, in dealing with the epidemics, Medicine has not to wait impotently until all the newly nascent viruses had been paralized and checked by a gigantic conquest of all virgin soil.

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Addendum

Late reports, which came to me after the closure of my article, give account of two authentic cases of the Far Eastern type of epidemic hemorrhagic fever that were observed in Czechoslovakia, the neighbor of Hungary. I had not yet an opportunity to see the Czech report and to determine the geographical site of these cases and their relation to the Hungarian outbreaks. (Cf. Plank J. et al. Prve dva diagnostikovane pripady hemoragickej nefrozo-nefritidy na uzemi nasej republiky; virova nefrozo-nefritida Dalekoho vychodu. Cas. lék. česk., 1955, 94: 1078-84).

Nine Months with the Paratroop Medics

By

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(With four illustrations)

IT IS A gloomy but inescapable fact that the American youth of today has lost the zest for adventure. He craves security and the vicarious excitement of sitting in the stands (or at the T-V set); cheering on his team seems to exhaust his available adrenalin. To get enough young men to fill two divisions of paratroopers requires the recruiting effort of the whole U. S. Army—and even then many "jump slots" are filled with "straight legs" as the nonjumpers are called by the paratrooper.

The period from 15 August 1953 to 15 May 1954 was one of the worst, with regard to the number of accidents and deaths among paratroopers, in the peacetime history of the 82nd Airborne Division and yet, even through those trying months, it was safer to jump out of an aeroplane than to ride the highways around Fort Bragg. More paratroopers were killed in automobiles than were killed in their trade. Yet everyone rides in automobiles and very few of us will jump out of planes. The psychological factors concerned have been ably presented by previous writers on this subject and it is not my intention to discuss them here, nor for that matter, to discuss injuries the paratrooper sustains outside of his working hours. However, it is good, in contemplating the report submitted below, to have a sense of proportion, and to remember that the automobile is more deadly than the parachute. The sad thing is that none of us is more willing, statistics or no, to "bail out" than to climb into that new sports roadster —and the Airborne will still be too big a gamble for those who prefer to risk their lives more often but less obviously. (See Appendix I)

During the period of this report an intensive training program, leading up to Exercise Flashburn as the grand finale, was maintained by the 82nd Airborne Division. In the first part of it, until the mass jump of 17 November 1953, the T-7 parachute was used. Subsequently the T-10 parachute was issued and used almost exclusively for the duration of the period. Certain broad differences in the performance of these parachutes were reflected in the nature of the injuries sustained. Due to their different modes of deployment, the opening shock of the T-7 is much greater than that of the T-10 and resulted in such injuries as lacerated chins (from contact with the quick release box), strained backs, "sprung ribs" etc. from the whip-like effects of the sudden deceleration.

While the T-7 is much easier to guide in the air, thus reducing the danger of collision, it is more prone to collapse when tangles do occur, with sometimes fatal results. The landing speed of the T-7 is also greater but this is balanced by the tendency of the T-10 to drag the trooper across the Drop-Zone on a breezy day. This difficulty in guiding the T-10 and its sailing propensities may have resulted in more tree landings than were found in mass jumps with the T-7 but since pilot error in calculating wind drift, etc. can play such a large part in dropping a stick of paratroopers, the validity of this premise is doubtful.

At any rate the exercises were marred by the accident of 17 November 1953 in which one of the C-119's, in a rehearsal flight over the D-Z, fell out of formation and after ploughing through the paratroopers who had jumped from the preceding V, crashed and burned in the nearby forest. Eleven paratroopers were killed—the worst peacetime accident in the 82nd's history. The advent of the T-10 in the actual exercise two days

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FIG. 1. The Regiment drops while the doctor waits.

later was marked by a complete absence of injuries and for a while we medics felt that we could pack up and go home. But the "Ides of March" were yet to come and on the 11th—a lucky number it would seem—the day was beautiful and clear. The first sticks jumped and the winds rose. The green light flashed and out came the troopers again. They sailed into trees, they sailed

FIG. 2. One Battalion lands as the second flies over the D-Z.

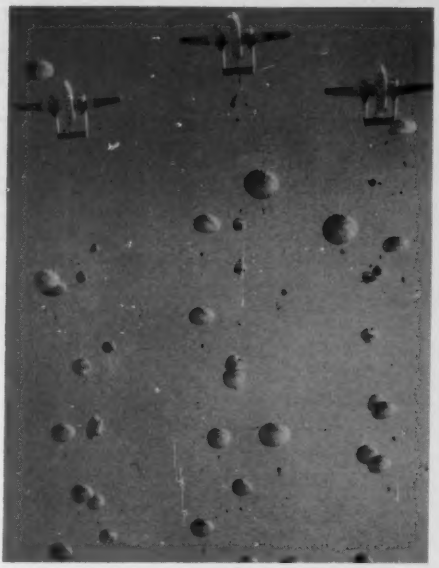

FIG. 3. The second V drops its load above the first. Two chutes bump together in the center of the picture.

across the Drop Zones, dragged behind the T-10's as a balloon jib drags a yacht—and once more the medics were busy. "Flash-burn" came and this time they were ready. There were so many straightleg medics on the Drop Zone that those of us who jumped were picked up and dusted off almost before we knew we had landed—and certainly before some of us started to feel the aches of torn ligaments and the bruises and cuts

FIG. 4. Regimental Collecting Station with the Helicopter standing by.

TABLE I. TOTAL REPORTED INJURIES - 15 Aug.53 - 15 May 54

		Oscillation - severe	Dragged by wind	High wind on P.L.F.	Poor P.L.F.	P.L.F. equipment	P.L.F. on his own	P.L.F. on vehicle, main, house	P.L.F. in trees	P.L.F. on hard ground	Hit by stone or plane crash	Air collision - in air	Malfunction - main	Malfunction - partial	Fell on quick release box	Tangled in his own lines	Broken static line	Fell clear on exit	Unknown		TOTAL
Multiple injuries												16			2			1			19 (16 killed)
Head–concussion				1	2	9	2					1					1			1	17
Face & Neck	C&A					2	1			1	1					6	11		2	2	26
	S&S			3		4											3				10
Strangulation				1	1																2 (1 killed)
Spine	Fr.			1		2								5						3	11
	S&S			1	1	28	1			3	2	5	1	4			1		1	2	50
Shoulder	Fr.					1															1
	Dis.				1	5															6
	S&S	1	2			4		1									3			1	12
	C&A	2	2			5						1					5			1	16
Elbow	Dis.					1	1		2												4
	S&S					2	1	1												1	5
Arm	S&S					1															1
	C&A		3			4											1		3		11
Wrist & Hand	Dis.					1															1
	S&S		1			4	1			1										1	8
	C&A		2			1											1				4
Thorax	Fr.									1											1
	C&A		2			4	1			3				1							11
Abdomen & Lumbar	C&A		2			5				1							1			2	11
Pelvis & Hip	S&S					2											1		1		4
	C&A		2			1				5										1	9
Thigh	Fr.					1															1
	C&A	1				3	1			1							1		1	1	9
Knee	S&S					14	1			1	3						4		3	1	27
	C&A					3	2	1									1			1	8
Leg	Fr.					6															6
	S&S					1	1														2
	C&A					2	1			5							1				9
Ankle	Fr.					8							1							3	12
	S&S	1				27	1	1		4	3		1							2	40
Foot	Fr.					3				1										1	5
	Dis					1		1													2
	S&S					2													1		3
	C&A					1															1
TOTAL		5	23	5	158	15	5	29	9	23	3	10	2	6	35	1	12	24	365		

Fr.=fracture
Dis.=Dislocation
C&A=contusions and abrasions
S&S=sprains & strains

TABLE 1

TOTAL REPORTED INJURIES—15 AUG. 53–15 MAY 54

that later increased the roll call of the injured. There were severe injuries, of course; there almost always are a few, but it was the biggest, and safest jump ever put on by an American airborne division in peacetime.

The jubilation was dampened before this eventful month ended by the crash of a C-119 on top of a mess hall shortly after takeoff. The resultant injuries and deaths are not reported here except for five members of the 82nd division riding as passengers on a routine supply mission.

To enable a better understanding of the ways in which the paratrooper can be hurt

it is necessary to consider him from the moment the signal "Get Ready" is given, until he sheds his harness and moves off the D-Z to become a foot slogger like any other soldier. Before that moment he may be galled by his pack straps, his back and shoulders tired from the tremendous weight of equipment he carries; he may have been airsick during the long ride in a lurching airship—but these things are only contributory. He shuffles his feet, stands up and hooks up his static line. He checks equipment and sounds off. The green light goes and the whole file of men moves as one, shuffling towards the tail, throwing the static line rearward, pivoting sharply in the door and leaping up and out as the count "One Thousand" is torn from lips buffeted by the thundering prop-blast. If the plane lurches or he miscalculates his move he has no chance to stop and take a better body position. With a short D-Z there is perhaps one second per man to get out that door or the last few troopers will land in the trees—and if he does try to stop those last few will push him out just the same. So some are bruised by the door posts as they go. Others, the sloppy ones, get their static line tangled and are burned or cut as it pulls out their 'chute. With the T-7 the "Three Thousand" is cut short by an unholy jerk as the canopy catches the wind, and a bad body position pays off in strained backs or bruised groins.

For those who do not obey the command "Keep a sharp lookout during descent" there is more trouble in the form of entanglements. Men drop at different rates of speed, the propeller blast tumbles them together or whirls them apart and in mass jumps for a few mad seconds the air resembles a main intersection at rush hour—and nobody able to stop.

The Parachute Landing Fall—or PLF as it is called in trooper jargon, is the most dangerous part of the drop. Most of the injuries result from improper technique in ensuring that the Five Points of Contact—balls of the feet—calf of the leg, thigh, buttock and latissimus dorsi muscle hit the ground in proper sequence and break the fall. The expert jumper maneuvers his body, pivoting and twisting like a skier on a slalom course and seldom has more than slight bruises. The tyro, to whom even the rigorous training has not given that automatic reflex series of motions, is likely to "clobber in" especially if conditions of wind and terrain are not just right.

Previous articles on this subject have gone into great detail in describing just what faulty move has caused a particular type of injury. Perhaps our troopers and our medics are less observant today—or less gifted in description. The records of the nine months under consideration were kept as fully as constant supervision could ensure, yet many men apparently did not know just what happened to them. In the terrific excitement of the jump, things happen too fast to be recorded. Those of us who have played football or been in Battalion Aid Stations in battle know that many times even severe injuries are scarcely noticed until the action is over and the heated muscles are cooling. So it is with the paratrooper—and that must serve as excuse for those who wish a more meticulous recording of facts.

Table 1 showing causes of parachute injury in 365 cases lists the possible happenings from the time the man leaves the plane until he is free of his harness. Many of these injuries might have been avoided by better technique and it is especially evident that the P.L.F. is the procedure causing most of the accidents.

Table 2, an extract of Table 1, lists the results of poor P.L.F.'s in 158 cases as an illustration of what can happen. Some who were hospitalized and found to have minor injuries were released quickly and others, not hospitalized, were later screened and minor fractures etc. treated on an out-patient basis. This is because the medical officer on the D-Z may send cases either direct to hospital or detain them within the division as he judges their severity. Also, for example, to balance a helicopter load, a lightly injured man might be evacuated to hospital. Diagnosis on non-hospitalized cases are those on the Emergency Medical Tags

TABLE 2
RESULTS OF A POOR P.L.F.

Injury	Disposal	
	Hospital	O.P.
Concussion	3	6
Face C&A	0	2
Neck S&S	4	0
Spine Fr.	2	0
S&S	16	12
Shoulder Fr.	1	0
Dis.	3	2
S&S	2	2
C&A	4	1
Elbow Dis.	0	1
S&S	0	2
Arm S&S	1	0
C&A	0	4
Hand Dis.	1	0
S&S	1	3
C&A	0	1
Thorax C&A	3	1
Abd. & Lumbar C&A	2	3
Pelvis & Hip S&S	2	0
C&A	0	1
Thigh Fr.	1	0
C&A	1	2
Knee S&S	7	7
C&A	2	1
Leg Fr.	4	1
C&A	0	3
Ankle Fr.	8	0
S&S	9	18
Foot Fr.	3	0
D	1	0
S&S	0	2
C&A	0	1

Fr. = fracture.
Dis. = dislocation
C&A = contusions and abrasions.
S&S = sprains & strains.

at time of injury. It was not practicable to follow up these minor cases after the exercises were over to confirm the diagnosis. On those admitted to hospital, final diagnosis is given.

Considering that the total number of jumps during this period of nine months was approximately 70,000 and that perhaps one third of these were mass jumps during maneuvers as distinct from the training jumps where fewer planes and men are involved, the injury rate is small—of the order of 0.5%. More exact figures are not available to the writer but the rate compares favorably with that reported previously for 1946-49 where almost 50% fewer jumps—and fewer mass jumps—were made in a comparable period of time. The death rate, of course, is much greater due to the two airplane crashes which took a total of 14 lives in the 82nd Division alone. Many of the factors which contributed to these fatalities have now been eliminated by the use of new equipment and procedures. It is unlikely that such accidents will occur again.

SUMMARY

Popular opinion to the contrary, more paratroopers are killed by automobiles than by parachuting. In the nine months of build up to Exercise Flashburn records of all injuries due to parachuting were kept and are reported here. The history of the period is told briefly. The paratrooper is followed from the plane to the ground in order to understand how he may be injured and charts are presented to show the number and nature of these injuries. Comparisons with previous reports are made.

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APPENDIX I

[1] During the latter half of 1953 and first part of 1954 the death rate from automobile accidents in the 82nd Airborne Division averaged 2 per month (figures derived from Division Safety Officer's Statistics as published in bulletins, safety campaigns, etc.). This is compared with the 17 paratroopers killed during the 9 months under discussion.

[2] Major Spurgeon H. Neel reports that in the 4 years from 1946 to 1949 inclusive there were only 6 deaths attributed to jumping or airplane crashes among troopers of the 82nd Airborne Division, in a series of 174,220 jumps. This means approximately one death per 29,000 jumps. The death rate for the period 15 August 1953 to 15 May 1954 was approximately 17 per 70,000 jumps, i.e. about 1 per 4,000 jumps. Obviously this was a very bad period in the life of the Airborne soldier, and yet more were killed in automobiles.

The Blood Transport of Respiratory Gases. The Effects of Altitude Hypoxia and Hyperventilation Associated with Positive Pressure Breathing

By

FIRST LIEUTENANT DOMENIC A. VAVALA, USAF (MSC)*

(With five illustrations)

INTRODUCTION

HEMOGLOBIN has been called the "second most interesting substance in the world."[1] The substance to command first place was presumed to be chlorophyll.[2] It is not surprising that hemoglobin should be accorded such a prominent position for it is intimately involved in the state of being which we recognize as life. It is hemoglobin which carries oxygen to the tissues for the sustenance of cellular functions, and it, likewise, carries away carbon dioxide, a catabolic product of cellular metabolism and the primary respiratory stimulant. As the prime transporter of these two important respiratory gases, hemoglobin continues to maintain its importance and interest as related to the physiological functions of the living organism.

As flying personnel ascend to altitude (reduced barometric pressure) leaving the familiar ground level conditions behind them, their bodies are exposed to a very significant stress, namely, a decreased concentration of oxygen in the atmosphere. The partial pressure of oxygen in the ambient air decreases as the total barometric pressure diminishes. This decreased partial pressure of oxygen in the inspired air, unless restored to its normal value by breathing supplementary oxygen from some type of oxygen dispensing system, will affect significantly the respiratory and circulatory systems. Therefore, the manner in which these two systems function at ground level, and how they are affected by altitude hypoxia and hyperventilation associated with positive pressure breathing will be discussed.

Air Force Photo

1ST LT. DOMENIC A. VAVAVA, USAF (MSC)

The physiological ceiling for man breathing air is 10,000 feet. At this altitude the alveolar oxygen partial pressure is 61 mm. Hg (Table 1),[3] giving a hemoglobin oxygen saturation of approximately 90% at a blood pH of 7.4 (normal). Normally, the oxygen saturation of hemoglobin is 95-97%. An arterial oxygen saturation of 93% is the lowest limit of normal, and a hemoglobin oxygen saturation of 90% produces a condition of undetectable hypoxia (Fig. 1).[3] If this altitude (10,000 feet) is maintained for

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TABLE 1

ALVEOLAR AIR AT EQUIVALENT ALTITUDES BREATHING AIR AND BREATHING 100% OXYGEN

Alveolar Air			Breathing Air		Breathing 100% O_2	
Oxygen Tension mm. Hg	Carbon Dioxide Tension mm. Hg	Water Vapor Tension mm. Hg	Barometric Pressure mm. Hg	Altitude in Feet	Barometric Pressure mm. Hg	Altitude in Feet
103	40.0	47	760	0	190	33,700
81	37.5	47	632	5,000	166	36,000
61	35.5	47	523	10,000	144	39,500
45	32.5	47	429	15,000	125	42,500
38	31.0	47	380	18,000	116	44,000
35	30.0	47	349	20,000	112	44,800

4 hours or more, or if ascent beyond this altitude is continued without the use of supplementary oxygen, hypoxia, a decreased supply of oxygen to the body cells, will result. At 20,000 feet breathing air the alveolar oxygen partial pressure is 35 mm. Hg yielding a hemoglobin oxygen saturation of approximately 70% at a blood pH of 7.4. At this arterial oxygen saturation the individual is in danger of imminent collapse. The high altitudes and supersonic speeds attained by modern aircraft make hypoxia an intolerable condition.

Above 40,000 feet breathing 100% oxygen will not maintain the body in a normal physiological state because the total barometric pressure is not enough to saturate the hemoglobin with the normal amount of oxygen. Thus, at 40,000 feet and above pure oxygen under positive pressure must be breathed. Positive pressure breathing involves a reversal of the normal respiratory mechanics. Normally, inspiration is active, expiration is passive. In positive pressure breathing the lungs are passively inflated by the positive pressure oxygen flowing into the lungs. In order to exhale, expiration now becomes the active phase. While positive pressure breathing, it is very easy for individuals to overbreathe, and this may lead to the hyperventilation syndrome. Hyperventilation is an abnormally prolonged increase in the rate and depth of breathing. The symptom complex of hyperventilation

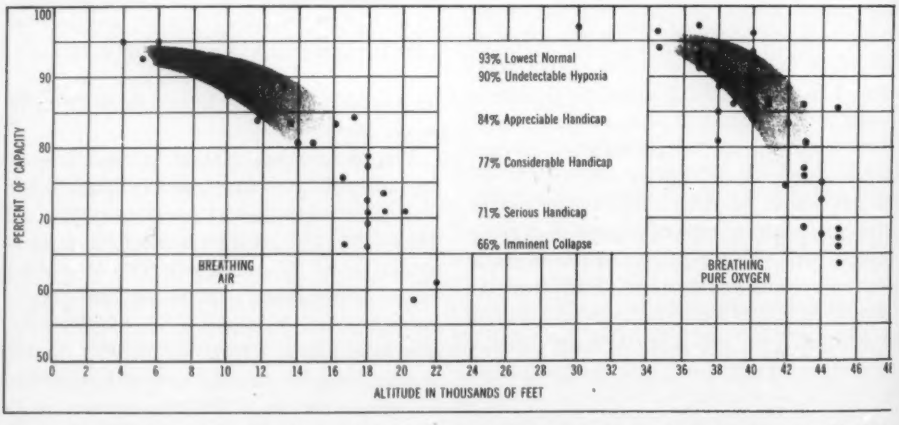

FIG. 1. Oxygen Saturation (% of capacity) of Arterial Blood and Range of Performance at Various Altitudes in Subjects Breathing Air and in Subjects Breathing Oxygen.

includes dizziness, impairment of vision, lightheadedness, tingling of the extremities, and tetany. It can be readily seen that the occurrence of these symptoms at altitude can be extremely dangerous.

Historical

Before considering the transport of oxygen and carbon dioxide at reduced barometric pressure, the carriage of these two gases at ground level conditions will be discussed briefly. In this connection, it would be worthwhile and of fundamental importance to examine briefly the pioneering experiments in this field.

Since oxygen is transported by hemoglobin, the relationship between the two is important. If we have a beaker open to the air, and containing a solution of hemoglobin, the concentration of oxygen in the solution will be directly proportional to the oxygen partial pressure in the atmosphere with which the solution is in equilibrium. Thus, if we have a series of tonometers, all containing a given amount of hemoglobin solution but each tonometer containing oxygen at a different pressure, the oxygen concentration in each of the tonometers and the percentage of hemoglobin present in the oxidized form can be determined. Barcroft carried out this experiment.[2] He placed a few cc. of hemoglobin solution in each of 5 tonometers, and each of the vessels was filled with oxygen at 0, 10, 20, 40 and 100 mm. Hg pressure respectively. He then related graphically the oxygen pressure to the percentage of oxyhemoglobin and thus formulated the dissociation curve of oxyhemoglobin (Fig. 2). When 100% saturated the hemoglobin solution contained about 20 volumes per cent of oxygen, and when a quarter or half saturated it contained 5 to 10 volumes per cent of oxygen respectively.

Since it was speculated that the combination of oxygen with hemoglobin was a chemical union, Barcroft[2] then approached the dissociation of oxyhemoglobin from the viewpoint of the law of mass action which states that the velocity of chemical change is proportional to the product of the concentrations of the reacting substances. The velocity of the reaction of hemoglobin with oxygen to form oxyhemoglobin is proportional to the product of C_O and C_R multiplied by a constant K. In the reverse reaction, the dissociation of oxyhemoglobin into hemoglobin and oxygen would be proportional to C_H multiplied by another constant K_1:

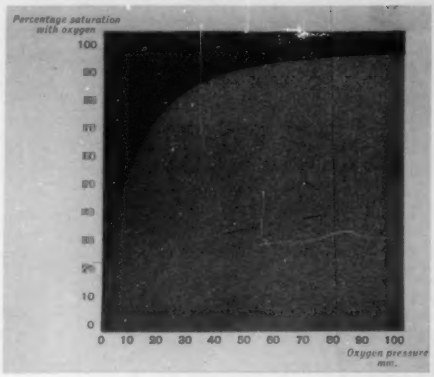

FIG. 2. Dissociation Curve Representing the Equilibrium between Oxygen, Oxyhemoglobin (Gray) and Reduced Hemoglobin (Black).

$$K(C_R \times C_O) \rightleftharpoons K_1(C_H) \qquad (1)$$

C_O = the concentration of oxygen

C_R = the concentration of reduced hemoglobin

C_H = the concentration of oxyhemoglobin

By working out the law of mass action Barcroft obtained a rectangular hyperbola identical with the curve depicting the relationship of the pressure of oxygen to the per cent of oxyhemoglobin (Fig. 3).

In order to approach the normal physiological situation, the following facts were considered. First of all, it was thought more likely that 4 molecules of oxygen unite with one molecule of hemoglobin in serial fashion, rather than all at once, as in the following manner:

$$\begin{aligned} Hb_4 + O_2 &\rightleftharpoons Hb_4O_2 \\ Hb_4 + 2O_2 &\rightleftharpoons Hb_4O_4 \\ Hb_4 + 3O_2 &\rightleftharpoons Hb_4O_6 \\ Hb_4 + 4O_2 &\rightleftharpoons Hb_4O_8 \end{aligned} \qquad (2)$$

Secondly, in the body the chemical combina-

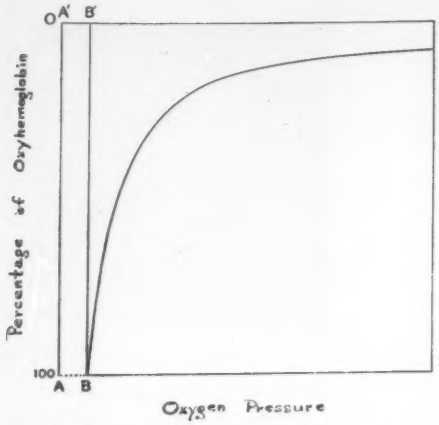

FIG. 3. Curve representing the relation of the pressure of oxygen to the percentage of oxyhemoglobin as derived from the Law of Mass Action.

tion of oxygen with hemoglobin is a reversible one:

$$Hb + O_2 \rightleftharpoons HbO_2 \qquad (3)$$

Now the question was what kind of curve would graphically represent this dynamic activity of hemoglobin in the body. If it is postulated that the serial reactions of oxygen with hemoglobin are independent reactions unaffected by the previous or succeeding chemical reactions, the type of curve representing the individual reactions is a hyperbola. The curve illustrating all four reactions is also a hyperbola. However, if the intermediate oxides are unstable so that the hemoglobin exists either as hemoglobin or oxyhemoglobin, then the curve which demonstrates this is not a hyperbola but a curve having a sizeable inflection (Fig. 4).[4]

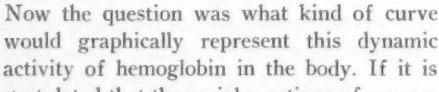

FIG. 4. A comparison of theoretically possible dissociation curves of hemoglobin.

The hyperbola represents each of the four serial reactions of oxygen with hemoglobin. The inflected curve illustrates hemoglobin existing either as Hb_4 or Hb_4O_8, without the intermediate oxides.

When blood is exposed to various oxygen tensions instead of a hemoglobin solution, and the oxygen tension plotted against the per cent oxygen saturation of hemoglobin, a doubly inflected or the characteristic S-shaped curve is obtained (Fig. 5).[5] This curve was remarkably constant under a variety of conditions, and an equation was formulated to represent the curve:[4,6]

$$\frac{Y}{100} = \frac{Kx^n)}{(1 + Kx^n)}$$

Where Y is the relative degree of saturation of hemoglobin, x the concentration of oxygen, K a constant and n the average number of molecules of hemoglobin, each capable of uniting with 2 atoms of oxygen to form an aggregate. In the case of blood, the value of n was determined to be about 2.5.

Ground Level Conditions

Inspection of the oxygen dissociation curve of whole blood will reveal some illuminating facts of a physiological nature. At an arterial oxygen partial pressure of 100 mm. Hg, which is the normal arterial oxygen tension at a normal blood pH, the oxygen saturation of hemoglobin is about 95-97%. The plateauing effect at the top of the curve signifies that there is a relatively small reduction in the percentage saturation of hemoglobin until the partial pressure of oxygen decreases to about 50 mm. Hg or about half its normal value. At 70 mm. Hg oxygen tension hemoglobin is about 93% saturated, the lowest limit of normal.[3] The steep part of the curve shows that a given drop in oxygen tension causes a greater desaturation of

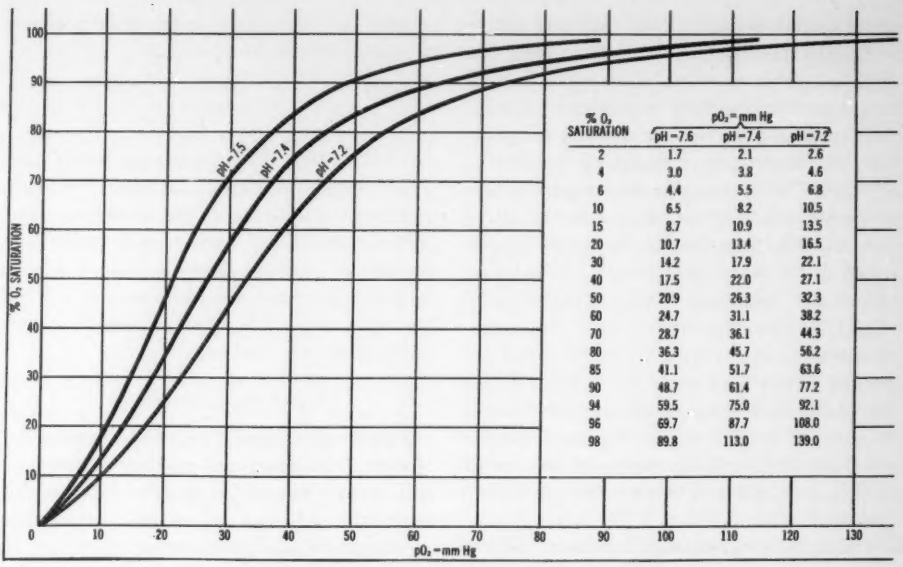

FIG. 5. Oxygen dissociation curves for human blood.

oxyhemoglobin compared to the flat part (top) of the curve. Thus, the S-shape of the oxygen dissociation curve of hemoglobin favors a maximum uptake of oxygen in the lungs, as long as the alveolar oxygen partial pressure is above 80 mm. Hg, and a rapid unloading of oxygen at the lower oxygen pressures prevalent in the tissues. A comparison of the S-shape curve with the hyperbolic curve shows how unsuitable hemoglobin would be as a transporter of oxygen if it behaved like the hyperbola. This curve illustrates that although hemoglobin has a great avidity for oxygen in the lungs, it would not unload the oxygen until its partial pressure in the tissues had fallen to a very low level. This would be incompatible with normal cellular functions.

Changes in blood pH. The S-shape curve in Figure 5 representing the dissociation of oxyhemoglobin at a blood pH of 7.4 is the normal physiologicol condition. This pH value is maintained relatively constant by the buffers in the blood but is primarily controlled by the $NaHCO_3/H_2CO_3$ ratio whose normal relationship is 20/1. Any alteration in either the numerator or the denominator will change the pH of the blood and affect the dissociation of oxyhemoglobin. A change in the reaction toward the acid side, fall in blood pH, will shift the dissociation curve to the right as shown in Figure 5. At a lower than normal blood pH the affinity of hemoglobin for oxygen is reduced. A comparison of the curve for a blood pH of 7.2 with that for a blood pH of 7.4 (normal) reveals that for a given oxygen tension the per cent saturation of hemoglobin with oxygen is less at pH 7.2 compared to pH 7.4. This indicates that oxyhemoglobin is unloading its oxygen more readily at the lower blood pH. On the other hand, a rise in blood pH above the normal value will cause the dissociation curve to shift to the left, increasing the affinity of hemoglobin for oxygen and increasing its per cent saturation. The result is that oxyhemoglobin does not release its oxygen as readily at the more alkaline blood pH.

Changes in temperature. Temperature fluctuations also affect the oxygen dissociation curve of hemoglobin.[7] An increase in temperature shifts the sigmoid curve to the right causing the hemoglobin to give up its

oxygen more readily. A fall in temperature will shift the curve to the left causing the oxyhemoglobin to retain its oxygen. During muscular exercise the metabolism of the active muscles is increased, and the temperature of the actively contracting muscles is elevated. This increase in temperature favors a greater unloading of oxygen to the active muscles. The liver, besides being the largest organ in the body, performs a multitude of important functions. Its temperature is slightly higher than the normal body temperature because of the many chemical reactions which take place in the liver. This increased liver temperature favors the unloading of oxygen to the hepatic cells and provides them with the increased amount of oxygen required in relation to their increased activity.

Changes in ventilatory volume. Hemoglobin, because of its buffering action when going from the oxidized to the reduced form, its combination with carbon dioxide to form carbamate, and the isohydric reaction occurring within the red blood cells, is almost as completely responsible for the transport of carbon dioxide in the blood as it is for the transport of oxygen.[8] From a physical point of view,[9] the amount of carbonic acid in the blood as expressed by the sodium bicarbonate/carbonic acid ratio, is determined by Henry's law which states that the amount of a gas that goes in solution is directly proportional to its partial pressure. Therefore, the amount of carbonic acid in the plasma varies directly with the partial pressure of the gaseous carbon dioxide in the alveolar air. From a physiological point of view, it is the respiratory volume which determines the alveolar carbon dioxide partial pressure and thus, the amount of carbonic acid in the plasma. Therefore, the ventilation regulates the two physical and chemical quantities. For example, 0.1 liter of carbon dioxide diluted with air to 1.0 liter is 10%; in 2 liters, i.e., 0.1 liter of carbon dioxide with air to 2.0 liters, is 5%; and 0.1 liter of carbon dioxide diluted with air to 4.0 liters is 2.5%. The greater the ventilatory volume, *a*, the smaller the percentage and partial pressure of carbon dioxide,[5] *b*:

$$a = \frac{1}{b}$$

Since the pH of the blood is primarily controlled by the sodium bicarbonate/carbonic acid ratio, a decrease in the alveolar partial pressure of carbon dioxide will reduce the amount of carbonic acid formed, which in turn will decrease the denominator of the base/acid ratio. The result would be a rise in blood pH or alkalosis.

Altitude Conditions

Effects of hypoxia and hyperventilation. Having considered the carriage of oxygen and carbon dioxide at ground level conditions, the influence of reduced barometric pressure will now be discussed. With ascent to altitude breathing ambient air, the partial pressure of oxygen in the lungs declines with the total fall in barometric pressure. With decreasing alveolar oxygen partial pressure, the arterial oxygen tension decreases in accordance with Henry's law. The reduction of the arterial oxygen tension is reflected in a lower percentage saturation of hemoglobin with oxygen. When the oxygen tension of the arterial blood falls to 61 mm. Hg (90% oxygen saturation), the hypoxemia (deficient oxygenation of the blood) arouses the automatic reflex mechanisms of the body into action. The chemoreceptors of the aortic and carotid bodies, situated in the aortic arch and the bifurcation of the common carotid arteries respectively, are stimulated by a fall in arterial oxygen tension (hypoxemia) and reflexly stimulate the respiratory center to increased activity. There also occurs an increase in heart rate, pulse rate and cardiac output. At hemoglobin oxygen saturations between 90-80%, this reflex activity is of a compensatory nature.[3] The increase in respiratory minute volume will increase the alveolar oxygen tension and, therefore, augment the arterial oxygen saturation.[10,11,12,13] A sustained increased respiratory rate, by blowing off the carbon dioxide

(hypocapnia), removes the primary respiratory stimulus, produces an alkalosis, i.e., a rise in blood pH, which tends to produce hypoventilation or respiratory arrest. So, on the one hand we have a chemoreflex mechanism which tends to increase respiration (hypoxia), and on the other hand an effect which tends to inhibit respiration (hypocapnia). This physiological paradox is quite a dilemma for the human body. However, the fact that the individual does continue to breathe indicates that the hypoxic stimulus is stronger than the respiratory inhibiting effect of the hypocapnia and the resulting alkalosis.

There are several factors involved in the augmentation of the arterial oxygen saturation in hyperpnea (exaggerated breathing movements). To begin with, the increased respiratory minute volume causes the composition of the alveolar air to approximate more closely the tracheal air,[9] which comes nearest to the composition of the outside air. Normally, there is a decrease in oxygen tension from the outside air to the lungs. This is because the inspired air with a high oxygen partial pressure mixes with the air in the lungs which is high in carbon dioxide and low in oxygen, and the net result is a lowering of the oxygen tension in the inspired air in the alveoli. The constant water vapor tension (47 mm. Hg) in the lungs must also be taken into account in this respect. In hyperpnea there is an increased rate of movement of air in and out of the lungs, and the inspired air does not have its oxygen tension reduced as much as normally. Also, in hyperpnea more alveolar aerating surface is exposed, and poorly aerated lung portions become better ventilated, increasing the saturation of hemoglobin. The increased rate of breathing causes carbon dioxide to be eliminated from the blood at a faster rate than normal. However, carbon dioxide enters the blood from the tissues almost as fast as it is blown off, while oxygen consumption is only slightly increased by moderate ventilation. It has been shown that the alveolar oxygen tension increased 1.5 to 2 times as fast as the alveolar carbon dioxide partial pressure fell.[7] The reduction of alveolar carbon dioxide is beneficial because there is more room for oxygen to occupy..

With reference to the immediate base/acid balance of the blood as represented by the sodium bicarbonate/carbonic acid ratio, hyperventilation, an abnormally *prolonged* increase in the rate and depth of breathing, by eliminating carbon dioxide from the blood will reduce the denominator, the sodium bicarbonate will be increased in relation to the carbonic acid, and a state of respiratory alkalosis ensues. It would appear that the increased alkalinity of the blood would be of temporary benefit because for a given oxygen tension the oxyhemoglobin saturation is increased, the normal oxyhemoglobin dissociation curve of pH 7.4 being shifted to the left. If considered from the point of view of the lungs, the shifting of the dissociation curve of oxyhemoglobin to the left increases the per cent saturation of the arterial blood. On the other hand, since the increase is only in per cent oxygen saturation and not in oxygen partial pressure, for any given partial pressure the arterial blood will have a higher per cent saturation indicating that it is not unloading the additional oxygen to the tissues where it is of the most benefit. This is especially true if we are dealing with the top or flat portion of the dissociation curve. Hyperventilation has been employed experimentally up to 25,000 feet to increase the alveolar oxygen tension and maintain consciousness for as long as 15 minutes.[12]

Positive pressure breathing is a method for increasing altitude tolerance by increasing the pressure of oxygen in the mask and, therefore, in the lungs to levels above the ambient pressure, that is, to pressure levels above those outside the mask and chest. In the U. S. Air Force positive pressure breathing is used in flights at 40,000 feet and above in order to maintain the body in a normal physiological condition in respect to arterial oxygen saturation. Since this method of pressurizing the lungs with oxygen is a reversal of the normal respiratory mechanics,

it is very easy for individuals to become anxious or excited at the subjective sensation of the positive pressure oxygen flowing into the lungs and inflating them. In addition, since active muscular effort is necessary to exhale against the incoming positive pressure, this, too, may cause some anxiety, or excitement, or even fear. The individual may also feel that he is suffocating and possibly not receiving enough oxygen. This of course is far from the truth. Any excitement, anxiety or fear arising from positive pressure breathing will cause the individual to hyperventilate. This is usually an automatic and unconscious response. The individual who is positive pressure breathing at altitude is seated in his seat in the aircraft and can be assumed to be in a more or less resting state. With the onset of hyperventilation while in the resting state, carbon dioxide is eliminated from the blood stream at a much faster rate than normal with the result that the carbon dioxide tension in the blood begins to fall. As the chemical homeostasis of the blood is disturbed the individual will have symptoms such as dizziness, blurring of vision, lightheadedness, tingling of the extremities, and finally tetany. As the blood carbon dioxide tension is falling, the blood pH is rising producing a respiratory alkalosis. It has been suggested that the tetany of hyperventilation may be caused by the alkalosis, i.e., rise in blood pH per se, the fall in carbon dioxide tension, hypocalcemia and hypoglycemia.[14]

The treatment of hyperventilation is simple and effective and can be accomplished by the individual, providing the symptoms are recognized in time. It consists of slowing the respiratory rate or holding the breath for a few seconds. This allows the carbon dioxide in the blood plasma to build up, and as this occurs the symptoms will disappear. Other effective measures for correcting the respiratory alkalosis is to rebreathe into a paper bag or administer oxygen-carbon dioxide mixtures. When hyperventilation is associated with hypoxia, slowing the respiratory rate and breathing 100% oxygen usually suffices. If the hyperventilation is too severe, oxygen-carbon dioxide mixtures may be necessary.

Summary

The hazards of high altitude flying can only be overcome if the underlying causes are uncovered and completely understood. Oftentimes, the mastery of one problem produces another problem of either lesser or greater magnitude than the previous one. Oxygen dispensing systems have not completely eliminated the hypoxia problem. Mechanical malfunction or improper use of the oxygen system can be just as serious and dangerous as breathing air with a dangerously low concentration of oxygen. Furthermore, positive pressure breathing cannot be carried out effectively above 50,000 feet because the magnitude of the positive pressure required to keep the blood in a normal or quasi normal state of oxygen saturation, among other things, will cause pooling of the blood in the dependent parts of the body (stagnant hypoxia). Also, with positive pressure breathing hyperventilation enters the picture. Hypoxia and hyperventilation are two intolerable conditions at altitude. Of this there can be no doubt. A knowledge of the normal blood transport of the respiratory gases and the effects of altitude hypoxia and hyperventilation associated with positive pressure breathing can prove to be invaluable in preventing, recognizing, or treating these conditions at altitude, thus saving human lives.

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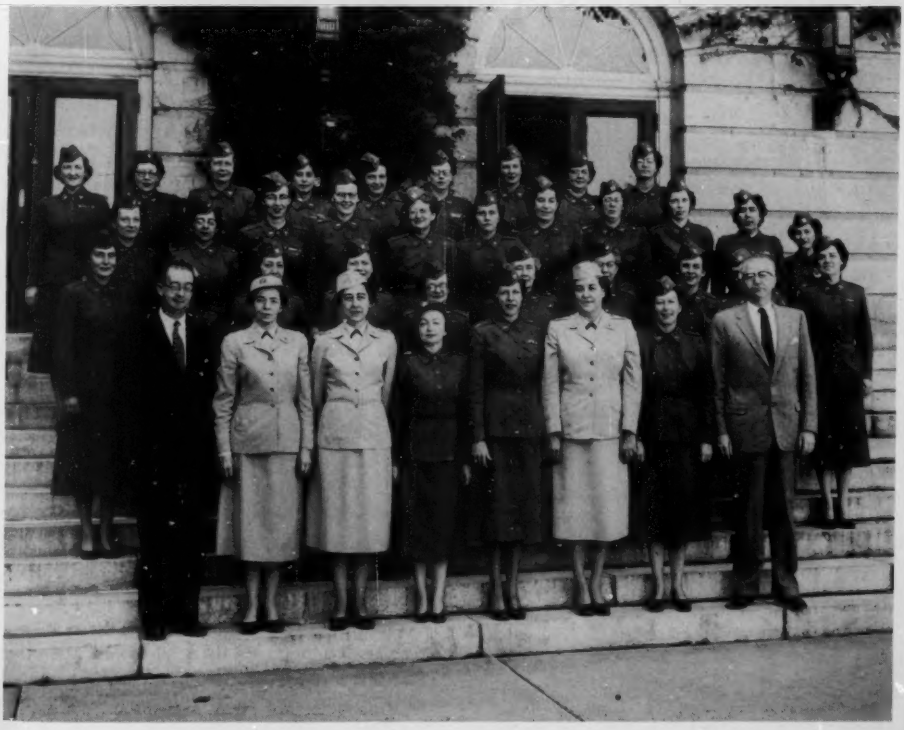

The Relative Frequency of Tetanus Infection in a Civilian Orthopaedic Practice: Comparison with Military Service Statistics

By

JOHN E. EMMET, M.D., AND LOUIS W. BRECK, M.D.*

DATA on the incidence of tetanus infection among military personnel are available in the literature and have furnished confirmation of the efficacy of prophylactic immunization against tetanus by the use of tetanus toxoid.[1,3] In both the American and British Armies during World War II tetanus infection was extremely infrequent.

In the United States Army, for example, it has been reported[3] that only 12 cases are known to have occurred. They occurred among a group of 2,734,819 admissions for "wounds and injuries" and the relative frequency is reported as 0.44 cases per 100,000 admissions for wounds and injuries. All of these but one were in men who had sustained penetrating injuries; the exception was a burn case.

The authors of this paper (Long and Sartwell) state that ideally the frequency with which tetanus infections occurs should be expressed in terms of cases per 100,000 admissions for wounds and injuries of the type which involve a risk of tetanus and point out that army statistical records include in the category of "wounds and injuries" all admissions due to external causes. Several conditions, therefore, involving no risk of tetanus are included in this category, such as chemical poisoning, electrocution and heat exhaustion.

They mention that tetanus was common among civilian casualties during the Manila operation in World War II, at least 473 cases having occurred with 389 deaths. Similarly at least 20 cases of tetanus with 14 fatalities occurred among civilians injured during the campaign on Saipan.

The literature reveals no information concerning the relative frequency with which tetanus occurs in civilian practice, the subject of this report. Because of the absence of data bearing directly on the incidence of tetanus the device has been used of taking the deaths from tetanus as reported in *Mortality Statistics of the United States Bureau of Census.* Thus Moore and Singleton[2] using this method present the average annual death rates from tetanus expressed as deaths per million population for several southwestern cities. The figures for the cities are as follows: San Antonio 41, Galveston 32, Houston 22, and Fort Worth 21. The authors point out that death from tetanus occurs more frequently in the southern part of the United States than it does in the nation as a whole, as is apparent when these figures are compared with the average annual mortality rate from tetanus on a nationwide basis for 1938-39 of 0.76 per 100,000 population or 7.6 per one million population. Since 1939 tetanus due to a serious injury has been classified with the injury and does not appear as tetanus in the *Mortality Statistics of the Bureau of Census* referred to above.

A recent review of all fractures in our speciality practice of Orthopaedic Surgery in El Paso reveals that from 1937 through April of 1955, a total of 10,495 fracture cases were treated. Of this total 362 were compound fractures. In such cases, of course, a definite risk of tetanus exists. Among the 362 compound fractures 3 cases of tetanus infection occurred. This is a relative frequency of 0.83 percent. In other words, the relative frequency with which tetanus occurred in 362 cases of compound

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fractures treated in this speciality practice in El Paso between 1937 and the present is less than 1 percent.

This low figure is undoubtedly affected by several factors. One of these is the fact that some of the cases of compound fractures occurred in those, such as veterans of the military services, who had received basic immunization and booster doses with tetanus toxoid during the recent war. Such cases, for which reliable information exists that basic immunization against tetanus and the stimulating dose within the previous 3 years has been given, receive a further stimulating dose of tetanus toxoid at the time of injury. The second factor which is believed to affect the low frequency of tetanus in these cases with definite risk is that it has been the routine practice in this office to administer prophylactic dosages of 10,000 units of tetanus antitoxin after preliminary skin testing in cases in which risk of tetanus exists. Thirdly, of course, adequate surgical treatment of all open wounds is insisted upon. Cleansing, debridement and surgical judgement as to whether to close a wound or leave it open are considered of equal importance.

The cases of tetanus reported herein occurred in 1937, 1939 and in 1952. All three cases were fatal and occurred in males, aged 9, 14, and 33 respectively. The 9 year old sustained a compound fracture of the ulna when he fell out of a tree onto the ground. The bone protruded through the skin and was severely contaminated by the earth. This patient developed tetanus 16 days after his injury, despite the prophylactic administration of gas and tetanus antitoxin. The 14 year old boy sustained a fracture of the ankle with loss of skin and extensive soft tissue damage in a motorcycle accident. He was treated elsewhere at first and seen in this office some 10 days after his original injury. He developed tetanus and died approximately 24 days after the injury, the incubation period being 21 days. The 33 year old sustained a compound fracture of the right tibia when a windmill blade fell from the top of a windmill and struck his right leg. His initial treatment was undertaken elsewhere and the patient, having received basic immunization and booster doses of tetanus toxoid while in the Army of the United States was given another booster dose of toxoid at the time of his injury. The open wound on the back of his leg was thoroughly cleansed and sutured and the patient referred to this office for an open reduction of the fracture. This was accomplished without disturbing the initial wound. On the tenth day after his injury, nine days after the open reduction the patient developed tetanus and despite the administration of large amounts of tetanus antitoxin, reopening of his operative wound and the insertion of a tracheotomy tube the patient died on the 21st day after his injury.

It is apparent that the frequency with which tetanus occurs among civilian groups is significantly greater than that with which it occurs among military personnel who have received basic immunization and stimulating doses with tetanus toxoid. It is suggested that the immunization of civilian population, particularly in an atomic age, would save many lives.

Summary

A review of the literature concerning the incidence of tetanus in military and civilian practice was done. Only a few articles have been written on this subject.

In the United States Army during World War II there were only 12 cases of tetanus. This represents an incidence of 0.44 per 100,000 admissions for wounds and injuries. (Reference 3).

In Manila, P. I., in civilians during the first part of World War II there were 473 cases of tetanus. During the Saipan campaign there were 20 cases of tetanus. (Reference 3).

Statistics on the incidence of tetanus in civilians for 1938 and '39 revealed an incidence of 0.76 per 100,000 population. (Reference 2).

In our own series we have reported three cases of tetanus in 10,495 fractures of which 362 were compound. This is a relative fre-

quency of 0.83 percent of the compound fractures.

This low figure is probably due largely to careful early treatment together with the fact that in this group there were many veterans who had already been immunized previously. All three of our cases terminated fatally.

Two of our cases were in boys age 9 and 14 who had not been previously given toxoid.

One case was in a veteran who had received toxoid for the last time 7 years before his injury. He was given both toxoid and tetanus anti-toxin after his injury. He developed tetanus 10 days after his injury and died on the 21st day after his injury.

The frequency of tetanus is much greater in civilan life than in military practice and this suggests the desirability of universal tetanus immunization of the civilian population.

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Perineal Urethrostomy for Traumatic Complete Structure of the Cavernous Urethra

By

WESLEY FURSTE, M.D.*

(With four illustrations)

THE following case is reported because of the rarity of the condition among Chinese battle casualties treated by the 22nd Field Hospital during the Salween Campaign in China.

CASE REPORT

During combat, about October 1, 1944, W. C. C., an 18 year old unmarried Chinese soldier, was struck by a bullet in the anterior surface of his left thigh at a level about five centimeters below the greater trochanter of the left femur (Fig. 1). The projectile continued to the right, passing through or in the vicinity of the cavernous portion of the urethra, going posterior to the right femur, and making an exit on the posterior surface of the right thigh at a level about 10 centimeters below the greater trochanter of the right femur (Fig. 2).

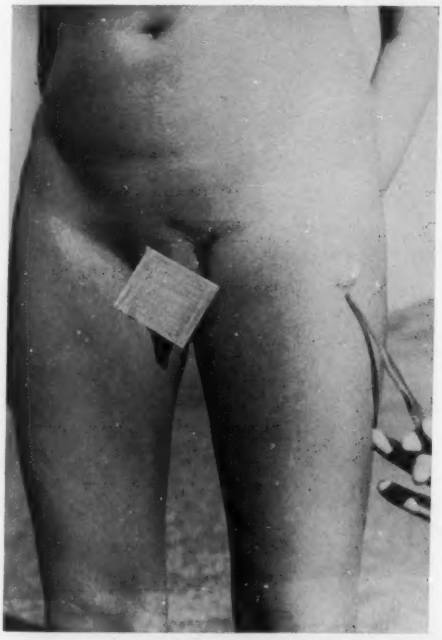

FIG. 1. Shows site of entrance of the bullet into the left thigh and the extensive cicatrix in the pubic region.

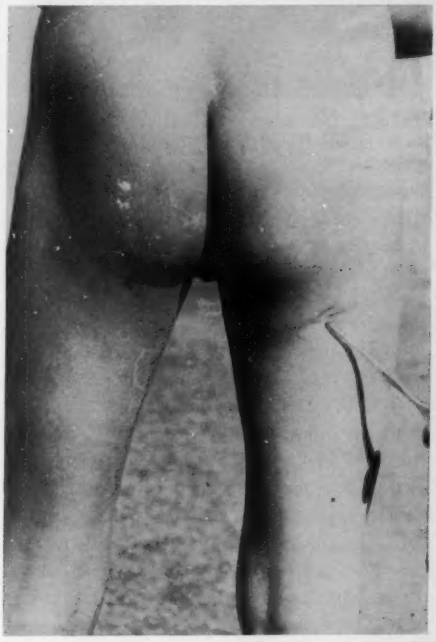

FIG. 2. Shows site of exit of the bullet from the right thigh.

About October 15, at a United States Army medical unit near the front, a catheter was inserted into the bladder through the external urethral orifice. About November 1, a urethrotomy was performed at the junction of the penis and scrotum; and some surgical procedure, the nature of which could not be learned, was done in the perineum between the scrotum and the anus.

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FIG. 3. The scroto-perineal region with the dilator inserted into the urethrostomy. Proximal end of urethra is sutured to perineum. There is unyielding cicatrix on the sides and posterior portion of scrotum.

Some time later and before evacuation to the 22nd Field Hospital, the penile catheter was removed.

On December 5, upon arrival at this latter hospital, the patient was urinating through the opening at the junction of the penis and scrotum; and appeared fairly well developed and well nourished.* About December 15, he began to experience definite difficulty in voiding. None of the large sounds, which were the only urological instruments the Hospital had or was able to obtain, could be passed through the urethral orifice or into the surgical opening at the base of the penis. The latter opening, in spite of dilations with the tip of a grooved director, continued to constrict. On January 4, 1945, the patient had a definitely distended bladder; and he was unable to void.

On this latter date, under Sodium Pentothal and Ether anesthesia, a perineal urethrotomy was performed. For exposure, with the patient in the lithotomy position, a perineal inverted U incision was made just posterior to the scrotum. The bulbo-cavernosus muscles were separated in the midline; and a small opening was made in the cavernous urethra as far anteriorly as possible. Through this opening, a medium sized rubber catheter was inserted into the bladder; the catheter was sutured to the skin and superficial fascia with two interrupted sutures of silk; and the incision edges were loosely approximated with silk. At this time, a more prolonged operation—urethrostomy—was not done because the patient developed laryngospasm during the anesthetic.

On January 17 under Ether anesthesia, a perineal urethrostomy was constructed. Using the same type of incision as for the

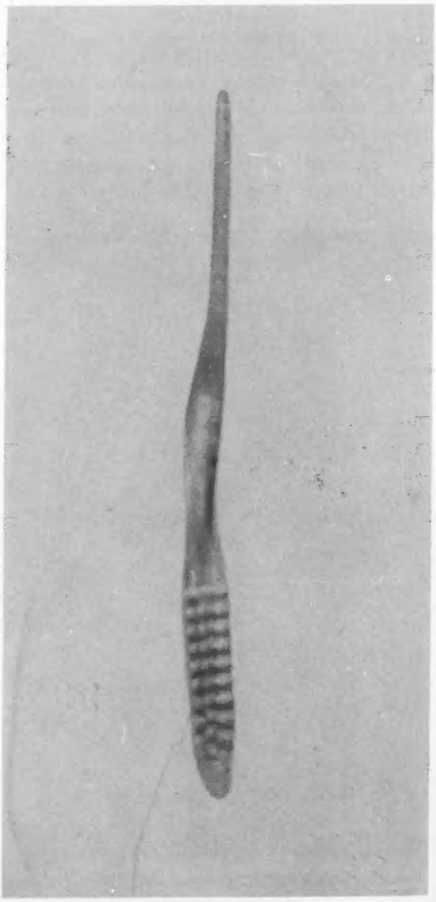

FIG. 4. Urethrostomy dilator made by sandpapering the end of a plastic tooth brush. Because of the scarcity of equipment, it was the best instrument that could be found to give the patient.

* Over a two year period in China, it was observed that the Chinese soldier has less pubic hair than the United States white soldier. At 18 years of age, this patient had only a few scattered hairs.

previous operation, the urethra was exposed. A bullet probe, which was passed through the incision into the anterior portion of the cavernous urethra, indicated complete unyielding obstruction. The urethra was severed at the site of the previous perineal urethrotomy; about one centimeter of the proximal urethra was isolated; and this isolated portion was anchored to the superficial fascia with six interrupted silk sutures. The catheter which had been inserted into the bladder on January 4 was left in place during the operation; and was not removed at the close of the procedure.

The patient's postoperative course was essentially uneventful with all 0800 and 1600 temperatures less than 99.8°. On January 27—the tenth postoperative day—the catheter was removed; and about twelve hours after its removal the patient began to have control of his urinary stream.

On January 31, daily dilations of the urethrostomy were begun with a dilator made out of a plastic tooth brush. (Fig. 3) This instrument, shown in figure 4, was the best which could be improvised or obtained and which could be given to the patient when he was discharged on February 6. In view of the extensive scars of the external genitalia, he was instructed to insert gently this instrument once a day into the urethrostomy.

On May 5, which was three and one-half months after the formation of the urethrostomy, the patient was seen for the last time. On that date, he had a good urinary stream and was in good health. Because of cicatrix of the external genitalia, he was not able to have an erection.

Discussion

In a large number of Chinese battle casualties treated by the 22nd Field Hospital, this case was the only one in which a urethrostomy was necessary; and was one of the few in which the urethra was injured.

Since the urinary path from the kidneys to the severe stricture in the cavernous urethra was in good condition, the urethrostomy was made just proximal to the stricture.

A striking feature of this case is that, even though the entrance was on the anterior surface of the left thigh and the exit was on the posterior surface of the right thigh, the femurs, innominate bones, and large vessels and nerves of the thighs were not injured.

Summary

In an 18 year old Chinese soldier, a perforating bullet wound through both thighs and the external genitalia caused a complete stricture of the cavernous portion of the urethra.

To make possible an adequate, controlled urinary stream, a perineal urethrostomy was constructed.

The Job Vision Program at Frankford Arsenal

By

COLONEL LAURENCE P. DEVLIN, MC, USAR*

GOOD eyesight and eye protection are basic requirements to employees working on lathes, grinders, and optical assembly lines. Nearly 10,000 persons are so employed in the Frankford Arsenal in moderately to severely hazardous jobs incident to the operation of Artillery, Small Arms, and Fire Control Instrument manufacturing.

To protect the eyesight of those individuals a Job Vision Program was set up under the Medical Director in June 1953. The program was designed chiefly as a preventive medicine one. Injuries, of course, do occur, and to care for these there is a physician constantly on duty in the dispensary of the arsenal. In the preventive medicine field the services of a full-time optometrist were made available to assist the Medical Director.

The Physician-Optometrist team seems to offer an excellent economical method of screening the employee population, ophthalmological case finding and treatment of industrial eye accidents.

In order to maintain the proper ethical relationship with private practitioners, all eye pathologies are referred to the family doctor with a brief note or phone call conveying our findings. These cases are then referred to an ophthalmologist by the family doctor. On occasions, with concurrence of the family doctor, cases are referred directly to an ophthalmologist. In certain cases where an employee has no family doctor to whom he can be referred, he is given the names of three (3) Board certified ophthalmologists within a reasonable distance from his home, and asked to contact one of these. A medical directory covering Philadelphia and five (5) neighboring counties, lists all physicians by specialties and facilitates such referrals. Diagnostic concurrence from ophthalmologists have been received in all but two or three cases. The following comments are considered appropriate in assisting all concerned in evaluating this service. In the first operating year of the program eight thousand employees were given a visual and ophthalmoscopic examination. Three hundred received first aid eye care at the dispensary by the physician, nurse or attendant on duty, and approximately one thousand received prescription or plano safety glasses services.

In the first three months of this survey, 28% of those examined were found to have an uncorrected refractive error to the degree in which visual acuity was less than 20/40 Snellen at distances and Jaeger Type #2 could not be read comfortably at 16 inches. Muscular difficulties were considered visual defects only when asthenopia or squint was present. This figure compares with the 26% found in the industrial visual surveys of H. Kuhn, M.D. in her book "Eyes and Industry" published in 1950 (C. V. Mosby Company). The procedure in cases of uncorrected refractive error is to refer the employee to the ophthalmologist, oculist or optometrist of his choice. Where eye protection is required, a prescription blank form is given the employee to be filled out by the examiner, and returned to the dispensary to be used in making prescription safety glasses. This examination is made at the employee's expense.

An accurate account taken of the last two months of this report shows only 10% correctible visual errors, a decrease of 18%. Exactly the same standards were used and most of those examined were rechecks on employees examined earlier.

The report on ocular pathology (organic changes in the eyes) is most significant. Four hundred and forty-seven or 5.5% cases (not including dispensary) were discovered. Of these 447 there were 189 or 23.75% who were not aware of their condition and are now undergoing treatment or under observation. An exact list of these pathologies, with the name, shop number and

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date of discovery has been compiled and maintained at this office. It runs the gamut from incipient senile cataract and amblyopia to acute and simple glaucoma and ocular tumor.

The ability of employees to perform satisfactorily with these conditions is extremely doubtful.

These figures show the over-all value of consistent repetitive eye examinations. In the first three months of this program, the ocular pathology was 8% of the number of employees examined. There has been a steady reduction of this figure as more employees receive education in ocular hygiene, and these surveys are repeated in the same shop or among the same groups.

The ophthalmoscopic examination now conducted routinely on employees during physical examinations, reveal many conditions that are potentially sources of claims against the government. The discovery of these conditions, the referral of employees or potential employees to their family doctors, and their subsequent treatment at their own expense by their personal ophthalmologists, identifies these conditions as non-occupational, both in the employees' mind and in the Arsenal employees' medical record. For example, a man who was found in a premployment examination (without ophthalmoscopic) to have less than 20/600 vision (industrial blindness) was considered to be a correctible myope. Ophthalmoscopic examination during an annual health inventory revealed the true nature of his difficulty (central choroiditis) which was entered into his medical records and a safer job was found for him. This is not an isolated example, but is repeated several times during a year.

In the safety goggle picture, complaints of discomfort have been reduced sharply. Each prescription safety goggle, before being issued, is checked carefully as to size and prescription on the vertometer. Dissatisfactions with safety glasses in the RT Shop, which had existed for four years, have been practically eliminated after discussion of complaints and refitting of employees safety glasses. This emphasizes the fact, well known to the profession for many years, that the mere issuing of safety glasses does not protect people who will not use them. Employees' acceptance of poorly fitted glasses cannot be expected because they irritate the individual and create refractive difficulties. These refractive difficulties in themselves may produce accidents.

In addition to the above work, some army personnel or dependents were examined and found to need refractions or ophthalmological care. They were referred to Valley Forge Army Hospital.

The job Vision Program, in common with all other services provided by the Health Service, has as its objective the maintenance of all employees at their peak performance to assure maximum quality and quantity of production. The attack on this objective from a visual point of view is three pronged: First, the surveying of all work areas in the Arsenal to determine the proper amount of lighting, control of glare, etc., for various specific jobs. Second, the examination on a periodic basis of all personnel whose jobs dispose them to ocular difficulties. Third, the routine annual examination of all employees for the detection of deficiencies, not caused by the job, but contributing to defective performance. Conditions discovered are then referred to the family doctor for correction. In this manner, the visual apparatus of Arsenal employees is maintained at peak performance.

Summary

Initially 28% of Arsenal employees were found to have poor vision and 8% were found to have eye pathology. As a result of the program which includes counseling and referral to private practitioners, a vast improvement was noted.

At present, on the recheck examination, only 10% of employees have poor vision. The incidence of eye pathology has likewise been greatly decreased.

This improvement in the organ of sight is bound to reduce absenteeism due to eye strain and the resultant symptoms of fatigue, headache and nervousness. The percentage of rejected or faulty work should decline in proportion to decrease in eye and visual abnormalities.

Red Regime Coming to Romania: Observations of a U.S. Surgeon of the Allied Control Commission During the Critical Years of 1945-47*

By

RICHARD T. SHACKELFORD, M.D.

IN A PREVIOUS article[1] I described the events that I saw occurring in Hungary during the years 1945-47. These events led to the overthrow of a freely elected democratic government by an unpopular but Russian supported Communist regime which has remained in power ever since, owing to the backing of Russian occupation troops.

During this same period, I was assigned, for a portion of the time, to the U. S. Military Representation on the Allied Control Commission of Romania and had an opportunity to observe the sequence of events that occurred there. As was the case in my article on Hungary, these remarks on Romania are being written from memory, from brief jottings in a personal diary, and copies of reports that I wrote at that time describing incidents or conditions that I had seen.

At the time when Fascism under Hitler in Germany and Mussolini in Italy was raising its ugly head, the Iron Guard was organized as the counterpart of totalitarian violence in Romania. It became a powerful factor, was not opposed by the government and was strongly pro-German in its sympathies. Anti-Semitism flourished. In 1937 King Carol, under martial law, installed a government of his own choosing and thereby assumed dictatorial powers. He did away with the party system, outlawed the Iron Guard, appointed his own ministers who were responsible solely to him, and formed a corporate state with himself at the head.

In August 1939 Germany and Soviet Russia, both of which were interested in revising the Versailles arrangements of 1920, signed a mutual friendship pact in which Germany recognized Russia's interest in Romanian-held Bessarabia. One month later World War II started with Hitler's invasion of Poland, and France fell a year later. Romania was isolated from the Western Allies. She had one of three choices: 1. isolated neutrality; 2. appeasement of Russia; 3, joining the Germans. Carol chose the last, and the pro-German Iron Guard came back into power.

In June 1940 Russia demanded and received Bessarabia and Northern Bukovina, and in August Germany and Italy forced Romania to give Southern Dobruja to Bulgaria and Northern Transylvania to Hungary as a sop to these co-belligerant allies. These losses of territory wrecked Carol's position so that Antonescu's Iron Guard forced him to abdicate and flee the country. Carol was succeeded as King in September 1940 by his son Mihai (Michael) who was just coming of age (21).

On June 22, 1941 Romania, simultaneously with Germany, declared war on Russia for the announced purposes of recovering Bessarabia, and Bukovina and destroying Communism. The Romanian people had not been consulted before this decision and the war was supported with indifference. The Axis offensive advanced rapidly and had conquered Bessarabia and Bukovina by October 1941. Then the fortunes of War changed and the Axis forces were slowly driven back by the Russians. The Romanian army with its German re-inforcements was expelled from Bessarabia and forced back into its own Moldavia and was still retreating. Meanwhile American and British air forces were bombing Romanian oil fields and railroads, as well as blocking traffic on the Danube by sowing mines in its stream. The Romanian people became fed up with the war.

In August, 1944, the Russian Army captured the Romanian City of Iaşi on the Moldavian-Bessarabian border, whereupon the young King Mihai ordered the Army to cease fighting the Russians on 23 August 1944, by which time the Soviet Army had penetrated Moldavia as far as the hills about 10 miles west of Iaşi. An armistice was signed with Russia, England and the U.S. by which Romania agreed to turn against the Axis, place her facilities at the Allied disposal and support the Allied troops in return for which, at the conclusion of the War, they would be given Transylvania (from Hungary) and have free elections to determine a form of government that would be sovereign and of their own choosing.

The German Army in Romania was caught unaware by the sudden disaffection of its former ally and since its supply lines were jeopardized it retreated hastily into Hungarian Transylvania, not however, without bombing Bucharest indiscriminately for three days to retaliate against the population for their switch in allegiance.

The Russian and Romanian armies then proceeded unopposed across Romania until the Axis forces were contacted at the Hungarian border. Romania escaped the destruction of war except on its Eastern and Western borders, the heavily bombed oil center of Ploeşti, and the slightly bombed city of Bucharest. The rest of the country was undamaged because the Germans retreated too rapidly to pillage as they had done in Hungary.

Immediately after the "coup d'état" in August 1944, King Mihai invited the leaders of the National Peasant, the Liberal, the Communist and the Social Democratic political parties to form a representative government. First they agreed upon a non-party man, General Sanatescu as premier. But in December 1944 (well before the end of the war) the entire government was replaced by another coalition—one with General Radelescu (a non-party man) as premier. The Communists, however, resented his methods and demonstrated against him.

After one of these demonstrations, André Vishinsky, of the Russian foreign office, arrived in Bucharest in 1945

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* Another article by the same author, under the title *Draping the Iron Curtain Over Hungary*, was published in MILITARY MEDICINE, Vol. 117, pp. 140-150, 1955.

and is said to have had a stormy interview with the young King during which he pounded on the table and insisted on a change in government, with his stooge, Dr. Petre Groza, of the leftist Ploughman's Front Party to be installed as prime minister. Vishinsky told Mihai to do this or else—and slammed the door like a child in a tantrum as he left the conference room. Mihai reluctantly acquiesced and Groza was installed as premier on March 6, 1945. The ministers he selected were Communists, Ploughman's Frontists (small minority leftist parties) or men expelled from the historic and large National Peasant and Liberal parties. The government was completely leftist. The King worked with this government until August 20, 1945.

When the war ended, King Mihai made inquiry of the great powers as to whether his unrepresentative leftist government, which had been established under Russian pressure, would be recognized as acceptable for negotiating a peace treaty. The U.S. and Britain replied in the negative. The King then asserted his Romanian constitutional right and called on the government to resign. With the exception of the finance minister, Groza and his ministers refused to do so.

The King then wrote identical letters to England, the U.S. and Russia requesting their assistance in forming a representative government acceptable to all three of the Great Powers for future peace negotiations. While awaiting a reply he withdrew from participation in the government and retired to his country palace at Sinaia where he refused to see the government officials.

This caused considerable embarrassment to Groza and his usurpers because the King's signature was necessary to legalize all decrees and to appoint a new minister of finance to replace the one member of the cabinet who had resigned. Government paychecks were worthless unless signed by a minister of finance. Russia immediately recognized the Groza regime as satisfactory and gave it the support it needed to survive. The U.S. and Britain withheld recognition. It was at this point in her history that I arrived in Romania.

Supported by Russia the Groza government continued without the King. Its personnel is worth describing briefly. Dr. Peter Groza, president of the Council of Ministers (Prime Minister) is a large, heavy set man with a mass of wavy white hair who makes a striking appearance which he fancies to be handsome. He struck me as being vain and brutal, like a bully. He was fond of tennis, but played poorly, and of the ladies with whom he appeared to have considerable success. He is a Transylvanian lawyer of humble origin but said to be wealthy. He was the head of the small Ploughman's Front Party which allied itself with the communists. He was relatively unknown until catapulted into his present position. Presumably he was selected by Vishinsky because he was willing to carry out communist ideas without having the unpopular label of being a communist.

Teohari Georgescu, the Minister of Interior, was a communist who served a prison sentence for his anti-nazi political activities during the German occupation. As head of the police and security organizations he was primarily responsible for the unwarranted arrests, incarcerations and terrorism that followed. He was a vindictive type, the very antithesis of the tolerant leader that the world hoped would spring up at the conclusion of the war.

Gheoghiu Dej, the Minister of Communications, was a communist who had been a railroad laborer and labor agitator before his elevation to the ministry. While minister he is said to have displayed extraordinary courage by firing a gun at a group of unarmed, protesting laborers.

Patrascana, the Minister of Justice, was a communist who previously had been professor of law at the University. He seemed scholarly, moderate and well intentioned and the only one in the group who was sincerely convinced of the merits of the communist theory. He carried little weight in the Council of Ministers.

Bagdasar was the minister of Health and a communist of peasant origin. He acquired his medical education by joining the Romanian Army which educated him on the condition that he remain in the medical corps for 9 years thereafter. Following completion of this service he married a wealthy woman and visited America where he attended Dr. Harvey Cushing's neurosurgical clinic at the Peter Bent Brigham Hospital in Boston as a "voluntary assistant" (observer) from October 1927 to October 1928. Widely advertising this training he returned to Bucharest where he established himself as a neuro-surgeon and achieved local success. He later joined the Communist Party but leaned further to the right than the others. His ministry was allocated only 1.7% of the national budget, and he is reported to have eagerly sought the appointment of Romanian Minister to Washington. However, shortly after the war, I heard that he died in Wien, ironically, of what is reputed to have been a brain tumor.

Zæaronei, the Minister of Agriculture, was a member of Groza's Ploughman's Front Party. He was a peasant who is said to have been unable to read or write. A standard joke in Bucharest was: "Never call on the ministers between 7 and 9 at night as at that time they are all in school being educated."

Tatarescu, the Minister of Foreign Affairs, and at one time of finance as well, was a political opportunist. He had formerly been a member of the historic Liberal Party and as such, Premier under King Carol. Following Vishinsky's ultimatum to Mihai he was expelled from his party and formed a New Liberal Party of his own. He was an astute politician and eloquent speaker. In his speeches he habitually refrained from extremes and spoke ambiguously so as to leave loopholes for retraction

should the tide of public opinion change. He always followed the tide rather than created it.

Rascana, the Minister of War, was a former general in the Romanian Army who retired and joined the Communist Party. Bejan, the Minister of National Economy, was a member of Tatarescu's New Liberal Party. These last two had little influence. Although the above named comprised the official government there were two other persons not occupying official positions who had a tremendous influence in Romanian affairs and appeared to be the actual political bosses.

The most important of these was Ana Pauker, a short-haired middle aged Jewess of repulsive appearance. The only thing that I ever saw attractive about her was the expensive looking furcoat (it looked like mink) which she wore on public occasions and which any movie queen or dowager would envy. She was an old-time communist who was said to have been condemned to life imprisonment or death in Romania years ago for her political activities, but escaped to Russia where she became and has remained a Soviet citizen. She became a vindictive, militant communist who is alleged to have ordered the execution of her husband for not fully conforming to communist ideals.

She was one of those who indoctrinated the "Tudor Vladimirescu Regiment" which was formed from deserters of the Romanian Army. These deserters were schooled in communism and forged into a military unit which fought alongside the Russians against the Axis forces. They became the chief military support of the Groza government as opposed to the regular army which was loyal to the King. When the Russian Army swept across Romania Ana Pauker returned and became a high official in the Romanian Communist Party, despite her Soviet citizenship. She was rumored to have direct telephone access to Stalin and to have been the medium through which Groza received his instructions from Moscow. She was powerful, ruthless and belligerent in communist interests until her rumored downfall some years later. A more perverted-appearing public figure I have never seen.

Vasile Luca was another high official in the Romanian Communist party who wielded power second only to Pauker's. He was also said to be a Soviet citizen and ruthless. These two names were feared and detested by the Romanian public. Both eventually came to grief at the hands of their own party, though not until several years later.

Such is the group that ruled Romania during my stay there when it was estimated that in a truly free and unhampered election the Communist Party would receive not more than 10% of the votes while the historic Liberal and National Peasant Parties would divide the popular vote. These latter parties were not represented in the government at all until after the "Moscow Agreement" following which they were represented by one minister without portfolio from each party, as will be described later.

After the king's withdrawal to Sinaia the Groza government continued in power, bolstered by Russian recognition. Its minority group was able to keep control by means of its police, armed communist groups (other groups were not permitted to be armed) and Tudor Vladimirescu troops. Personal liberty, freedom of speech and the press, opposition parties and democracy were completely suppressed. The Writ of *Habeas Corpus* did not exist and people were arrested without written warrants and incarcerated without trial or without charges being preferred. Many of those presecuting this terror were former Nazis or Iron Guardists of the type attracted by acts of violence and injustice who were accepted by the small Communist Party in order to swell its ranks.

The historic Liberal and National Peasant Parties were forbidden to hold public meetings, publish newspapers or broadcast by radio. Non-Communists were discriminated against and many joined the Party to make living easier. In one small town the writer was billeted for the night at the home of a local communist leader who spoke English. I commented to him that his diet seemed much better than that of other citizens in the town, and he replied: "Certainly, that is why I am a communist. When the Germans were here I was a Nazi. While the communists are here I am a communist. If the democracies take over tomorrow, I'll be a democrat, and many other Romanians are like me." There was much persuasiveness to his argument as the pleasant aroma of a roasting young suckling pig titillated my nostrils.

Terrorism was so rampant in 1945 that even Jews stated that conditions had been better under the Nazi occupation when at least the persecutions were orderly and for recognized reasons, which might be avoided, while now, no reasons were given and no one was secure.

On 8 Nov. 1945 occurred the King's Day incident. King Mihai was undoubtedly the most popular individual in Romania at that time. It was the annual custom that on this date the local population would file through several entrances to the Royal Palace in Bucharest and register their allegiance to the King. I joined the huge, goodnatured crowd which filled the large square in front of the palace by 8:30 A.M. waiting for the gates to open so they could register. Everyone seemed in good spirits and some of the younger ones were performing local dances while waiting. Traffic had been blocked off from the square.

At about 9:30 several large trucks, filled with armed men raising their clenched fists in the communist salute, burst into the square at a dangerous speed and ran back and forth through the crowd

to disperse it, running over those who could not get out of the way. Two of the trucks stalled and were overturned by the properly enraged crowd, and caught fire. The communist occupants started shooting as they tried to escape, but some were caught and beaten. Then, a group of men armed with automatic guns emerged from the Ministry of Interior building, which was situated across the square from the palace, and opened fire on the crowd, killing some and wounding many. In addition they took as prisoners a sizeable group of students who are said to have subsequently suffered severe physical torture, some of it administered by Georgescu personally.

I had a splendid view of the whole episode as I was standing beside the Statue of King Carol in the center of the square, talking with a friendly Russian officer, when the shooting caught us by surprise. We crouched behind the statue pedestal where we could watch the whole scene. We agreed that neither of us saw any shots returned by the crowd nor any armed persons among it. A detachment of Tudor Vladimirescu troops arrived, set up machine guns in the square and dispersed the people. The government controlled radio then blared forth invectives against Maniu and Bratianu, respective leaders of the National Peasant and historic Liberal (non-communist) Parties, whom they accused of organizing a riotous "fascist" demonstration against the present government, an obvious lie. Many people identified with those parties were arrested (an estimated 4000) and imprisioned without specific charge or evidence.

That evening both the British and American Missions were called upon by the hospitals to provide penicillin for treating some of the more seriously wounded. Throughout the night I examined 34 such patients. Only one was a communist and he said that he had been mistakenly shot by a fellow communist in a truck as he himself stood in the crowd watching the spectacle. He died. The other 33 were all young students or non-communists. The British surgeon had a similar experience and when we compared notes after a fairly thorough canvas of all the hospitals as well as the morgue, we concluded that at least 13 persons had been killed and 97 wounded——far more casualties than caused by the incident during Radulescu's regime which had caused Vishinsky in 1945 to order that government replaced. The Groza government remained in power unchallenged.

Several days later Mr. Mark Etheridge, President Truman's personal representative, arrived in Bucharest to observe conditions there. During his stay terrorism and violence quieted down perceptibly, to flare up on a reduced scale after his departure. So far as I know Mr. Ethridge's report has not been published and I am ignorant of its contents.

At the Moscow Conference in Dec. 1945 England, the U.S. and Russia agreed that the present Romanian government would be recognized by all three powers provided that 1. one member from each of the two historic parties (Liberal and National Peasant) would be appointed to the Council of Ministers, and 2. that free elections with candidates from and equal rights for all parties would be held in the near future. Immediately after the conference Mr. Harriman of the U.S., Mr. Clark Kerr of England, and Mr. Vishinsky of Russia arrived in Bucharest to implement this agreement. On their arrival American and British flags were broken out conspicuously over the city to take their place, for the first time, beside the always-present emblem of Russia.

The government put on its company manners, and the usual round of dinners, meetings and entertainments ensued. I was not present at these higher level affairs, but one night I was invited to and attended a large dinner the Romanian Army officers were having in the *Cercul Militaire,* at which Vishinsky unexpectedly appeared and made a speech. I am sure that he was unaware that any Anglo-American was in the audience (I was the only one to my knowledge) for he gave a most belligerent anti-western speech. As translated to me by my Romanian host Vishinsky arrogantly said "Soon the sparrows will stop chirping," referring to the popular non-communist political leaders, Maniu and Bratianu; and he "hoped that the King would be sensible enough to come along with the Communist Government," implying or else——. At the mention of the King's name the officers applauded so vigorously that Vishinsky's speech was halted for an embarrassing length of time. Derogatory remarks about Britain and the U.S. were highlighted throughout the talk.

Within a few days of the departure of the Big Three diplomats, Dr. Emile Hartigan, professor of law at the University of Cluj (a member of Maniu's National Peasant Party) and Romniceanu (a member of Bratianu's Liberal Party) were appointed by Groza as ministers without portfolio. Their position was completely uninfluential, particularly since there was no free press in which to publicize their opposition views. Indeed one of them informed me that he was rarely notified of extraordinary meetings of the Council of Ministers. However, technically this satisfied one of the conditions for Allied recognition of the present government, and assurances were given with tongue-in-cheek that free elections would be held the following March or April (1946) to satisfy the other condition.

The Allied diplomats informed the King that this was their answer to his letter of August 1945 requesting help in organizing a government. One can only speculate on the confusion in his mind since he had been informed the previous summer

that his government, which at that time contained four ministers of the Majority historic parties, was considered too unrepresentative to be accepted, and now was told that one containing only two ministers from those parties, and both of those without portfolio, was acceptable. Furthermore, to have to work with a hostile government which previously defied the King's constitutional right of demanding their resignation must have been a distasteful pill indeed, placing him in an awkward position with his people.

On 5 Feb. 1946 the Bucharest radio dramatically announced that the "Democratic" government of Petra Groza had been recognized by both the U.S. and Britain (Russia had previously done so as already mentioned), a statement that was not entirely true at the time as notes had been exchanged stating that recognition would be granted *only if* the Romanian government gave *written* assurances "of early, free elections etc." However, the following day the government staged a big demonstration to celebrate the recognition (which did not take place until several weeks later).

These demonstrations are a phenomenon common to all countries in which the Communist Party is active and are excellent illustrations of the regimentation practiced. The authorities give the public the impression that they are spontaneous, voluntary gatherings of the people for whatever celebration or protest is the order of the day. Actually the people are forced to attend by not very subtle means. The day before the occasion, signs are posted in the schools, and all places of business, stating the time, place and purpose of the demonstration; what they are supposed to shout at the appropriate moment, and that all employees are ordered to participate. At the appointed hour the personnel of each company or school gather at their place of business, a roll call is made and appropriate flags and placards are distributed. They then form columns and march to the designated point of general rendezvous. The appropriate flags are those of Romania and Russia only. Absentees are deprived of their worker's privileges in food and pay. Attendants are paid for a full day's "work" by the company, though no work is done that day.

At the demonstration itself rabble-rousing speeches are made by communist officials and, in response to prompting, the crowd shouts the slogan of the day. They then disperse and wander homeward. Such demonstrations were staged repeatedly, and since all business is stopped, an enormous number of work-hours is wasted. This particular demonstration for recognition was unusually lukewarm.

Several weeks later the Groza government was officially recognized by the U.S. and Britain. This was a tremendous help in firmly establishing a Communist Government to rule over a 90% non-communist people. And so what happened? Newspapers, radio-time and public meetings continued to be denied to non-communist parties, and their leaders were threatened and excoriated by the government-controlled radio and press. Later they were imprisoned, including old Maniu. I had in my possession a note which a prosperous farmer and local National Peasant Party leader received; it stated that unless he stopped his political activities he would be killed by the local communists. This was not an isolated case. Lawlessness was not suppressed. In a village I was visiting, a non-communist farmer was killed by the local communist leader, but no arrest was made, and the citizens feared to protest lest retaliation be brought on themselves by the local officials all of whom were communists.

In the town of Sibiu I saw posters stating that when an election is held a working man must belong to the labor union (communist-controlled) to be eligible to vote. Foreign-owned business and property (including American) was taken over and operated by the government while their true owners or officials were not even allowed to visit the place. Arrests and imprisonment without warrants or trial were everyday occurrences. Public trials were staged for propaganda purposes, with obviously false evidence or forced self-accusations. An Agrarian Act was passed by which land was confiscated from landowners and distributed among the peasants in a manner that discriminated heavily against non-communists. In Transylvania I met a formerly wealthy old lady whose handsome home had been requisitioned rent-free by the government for use as a Communist Party club house while she continued to have to pay full taxes. At the time I saw her she was being threatened with imprisonment and confiscation because she had insufficient funds to pay those taxes.

Despite the lack of war-destruction in Romania the combination of low output, armistice and peace term obligations (support of Russian Army of occupation, of Allied Control Commission, and two million dollars reparation to be paid to Russia, none to the U.S. or Britain), war costs and political uncertainty led to a fearful inflation. By 1947 the cost-of-living index rose from the base of 100 (in 1938) to 413 in 1943, to 3,678 in 1945 and to 525,688 in July 1947 when a drastic stabilization was achieved. As in Hungary, this was a helpful process in eliminating the power of the anti-communist upper and middle class groups. Communist government officials were in favored positions to thrive as they commanded "baksis" for official favors bestowed.

Unqualified individuals were placed in responsible positions solely because they were communists. This was very evident in the medical institutions and health services. Public health was ignored and the department starved of funds despite the constant

presence and threat of typhus. There were no sanatoria for tuberculosis and no drugs to treat syphilis while I was in Romania, nor was any effort being made to acquire them. When a diagnosis was made of either of these two diseases the patient was told that nothing could be done for him and sent home to spread the disease further.

Wages were paid in ridiculous proportion to the value of services received. For instance a judge, the courthouse doorman and an army colonel all received the same pay. In 1946 an opera star was paid 10,000 lei while a property man received 15,000 lei daily.

I left Romania in the Spring of 1946 and my knowledge of subsequent events there is based on what I have read or heard and no more authoritative than that of the reader.

Elections which had been promised in May finally took place in Nov. 19, 1946. I quote[2] "The patently false vote received by the government bloc (communists) of 4,766,000, as against 880,000 for the National Peasants and 289,000 for the Liberals, was obtained through a crass combination of pre-election press censorship and radio discrimination, terrorism and murder, falsification of electoral registers, multiple voting, and unabashed manipulation of the results." The signing of the Peace Treaty with withdrawal of the Allied Control Commission ended what little influence that the U.S. and Britain had in that country.

Old Maniu and Mihalache, leaders of the non-communist parties were arrested while attempting to flee the country. After the usual farcical communist propaganda trial they were sentenced to life imprisonment. (Maniu has completed his sentence, having died or been executed while in prison.) Their parties have collapsed and Romania has been completely communized.

The Moscow trained communists who had previously remained in the background, manipulating through their stooge Groza, now began to show themselves. The chameleon Tatarescu fell into disfavor and was replaced as foreign minister by Ana Pauker, the repulsive creature mentioned earlier. Vasile Luca took over the Ministry of Finance. I am happy to say that both of these later came to grief at the hands of their own colleagues. Bodnaras, another Muscovite power behind-the-scenes, became Minister of War.

The Communist Government began to publicly criticize and later attack King Mihai. On December 30, 1947 he abdicated in what was announced as a voluntary action on his part. After his departure from Romania, however, he publicly stated that his abdication was not voluntary, but was under duress by the communists and he did not consider it binding if a chance for return in the future should occur.

The government immediately announced the creation of the Romanian People's Republic and set about demonstrating its type of "democracy" by purging all potential dissidents from communism. Romania's history can be ended on that sour note.

* * *

A few observations made in 1945-46 about Russians, Romanians and our personal relations may be of some interest.

My contacts with Russian officers and soldiers in the Balkans were nearly always very friendly. There were a few exceptions with those who were inebriated, or with N.K.V.D. personnel (political commissars) who were more suspicious and less friendly than the others.

I took long trips (Bucharest-Budapest-Vienna-Munich) and around the whole country, usually alone. I did not speak Russian, Hungarian, or Romanian (French adequately, German brokenly, Italian miserably) and had to depend on those peoples' kindness and patience to see me through. This confidence was well placed and I never had a disagreeable incident with non-official soldiers or civilians. They went out of their way to be friendly. One time a Russo-Hungarian patrol insisted on changing a flat tire for me. Another time a company of Russian soldiers did a day's work to construct a crude but adequate ferry across an unbridged river so that my jeep could be carried across. Another time, when night caught me short of gas and near one of their camps they dined, wined and entertained me with music and songs, put me up for the night and sent me off the following morning with breakfast and a full gas supply and would not accept payment, holding up three fingers and saying "Stalin-Roosevelt-Churchill."

I doubt if they knew Roosevelt was dead and Churchill out of power. Soviet M.P.'s who directed traffic in Budapest always saluted us Americans with a friendly grin, and those at roadblocks gave us preferential treatment in passing us on with a minimal inspection of our documents. Frequently Russian officers dined or went on parties with us. Americans were great favorites with the Soviet rank and file during the first year after the war, and their hate campaign at that time was directed at the British who were blocking Communist expansion in Greece and their interests elsewhere in the world. A communist bigwig once said to me that Russia knew that America had no colonial aspirations and therefore their interests would never conflict, but that England was another matter. As a result the British were less well treated.

A year later much of the above had changed. Mr. Byrnes has made his Stuttgart speech declaring that U.S. troops would remain in Europe as long as necessary to preserve peace. England found it necessary to turn the fight against communism in Greece over to the U.S. and to give up India and

other parts of the Empire. The Soviets had discovered that England was weak and America was the power that frustrated them. The hate campaign was abruptly transferred from the British to us. For the first time, our travel was restricted and our documents painstakingly scrutinized at road blocks. Our social contacts with Russians became fewer and more formal.

Individual Russians are friendly likable people. They liked persons who laughed with them but are quick to anger if opposed and the cause of opposition not understood. They resent being looked down upon because they wear hats in theatres or restaurants, as is their custom. They respect a person who speaks forcibly (but not arrogantly), with minimal verbage, and are impatient of long-winded discussions. They are very proud of their government's accomplishments in its short history. They are convinced that they won the war single handed, but appreciated "the good will and slight military and logistic assistance which the Anglo-Americans had given them." They are proud of Russian products. They usually refuse a proffered American cigarette with the brusque statement that their two-thirds-cardboard-tip Russian cigarette is better, and offer you one. "American cars are good, but Russian cars are better." The same is said of pencillin (I never saw any Russian pencillin and doubt if they had any), physicians, surgeons and anything else that might be casually named.

Their idea of democracy differs from ours, in that they believe that the government is best qualified to decide policies for the masses of people who are inexperienced, and to guide them in their thinking, reading and actions. They've always been accustomed to censorship, internal espionage and unjust imprisonment. Their morals differ entirely from ours. An end justifies any means and the only crime to dishonesty is being caught at it. I encountered numerous examples of this.

Some Russian officers and soldiers are attractive, well mannered and seemingly well educated. They have a delightful sense of humor. Many are uncouth and illiterate, but attractive because of their open friendliness and good humor. They are extremely fond of children, dogs and horses with which they get along exceedingly well. There seemed to be a bond of understanding between the four groups. There is a sharp rank distinction in the Red Army, more so than in ours. Officers of different ranks do not mix socially. A subordinate rarely speaks unless spoken to, and they speak and refer to each other only by their titles. First names are reserved only for those of equal rank.

The people of Romania are of two distinct classes. The simple living, primitive peasant; and the slick city-inhabitant who practiced a profession, were merchants, government officials or employees, or lived by their wits. The peasant is a rather likable fellow, though not as friendly as one finds in Italy, Austria or Hungary, which may be due to less contact with Americans and suspicion of any foreigner. He has two big faults; his personal habits are unclean, resulting in a high proportion being infested with lice; and he is very cruel to horses and other animals. His life and wants are simple. One has the impression that so long as his land, family and live stock are not disturbed he cares little for politics. He is uneducated.

The inhabitants of the cities are quite different. They are relatively well educated, and shrewd bargainers, with little regard for morals, either social or personal. They are far more interested in their own than in public welfare. One day during a discussion someone said: "The Romanians descended from the Roman convicts and unwanted prostitutes who were sent out to garrison the Danube." A visiting Russian replied: "God! how they have degenerated since then." Actually there are many fine, attractive Romanian city families who are cultured, hospitable people of good character and with a love and talent for good music, literature and food, and for whom the writer had a strong liking. Unfortunately they have been destroyed by the present communist regime. Their place has been taken by corrupt, completely unmoral individuals. This explains one foreigner's remark that he believed "a Romanian would rather gain 25 cents dishonestly than a dollar honestly." They are certainly money-minded as well as opportunists and, generally speaking, with them principles are not an impediment to personal profit. Romania may become the satellite that first finds a way to deal with the unwanted Russians.

Medicine and surgery were both of very poor quality in Romania at the time I was there. Even in the best hospitals in Bucharest their methods were 10 or more years behind the times. Blood transfusions were rarely used, and then only in homeopathic amounts. I am quite certain that failure to employ a blood transfusion caused the death of a young boy whom I saw undergo a splenectomy. The lack of a liberal use of blood for transfusion was a characteristic of German and Hungarian Medicine as well at this time.

The antibiotics were completely unknown in any of the Axis countries in 1945. We demonstrated their efficacy in a few cases with the small amounts at our disposal, and with such spectacular results that the medical profession in the Balkans have exaggerated their virtues. At that time they had sulfonamides in the form of a German proprietary drug, ultraseptyl, which was used for everything, much as we abuse antibiotics today.

Poliomyelitis and an "iron lung" for its treatment were unknown and marvelled at. So was D.D.T. for insects, etc. I often wondered if we would not have combatted communism in those coun-

tries more successfully and more cheaply if we had sent teams of skilled physicians, surgeons and public health officers to cure the hundreds of patients that were neglected through ignorance and had conditions amenable to modern therapeutic methods. In surgery I saw hernias that would be reparable with tantalum mesh, countless intervertebral discs (a condition then unknown in Romania and no one capable of removing them), reparable congenital hearts etc. There must have been equally as many unrecognized or incorrectly treated medical conditions, while public health physicians and sanitary engineers had virgin territory. I believe such an effort might have had a decisive effect if we had sent able men of high character. I believe it would be effective today in backward countries vulnerable to communism. I was impressed by the tremendous propaganda and good-will value of our infinitesimal and unorganized individual efforts in the Balkans. For the participants it is the most gratifying and rewarding work that any graduate in medicine can do, and well worth the sacrifice of a year from one's private practice.

I close this article with a quotation from an official report on Romania I wrote in 1945, while Russia was still our ally and before the terms of "Iron Curtain" or "Cold War" had been originated, and before we had demobilized:

"Romania is another border where the opposing ideologies of Communism and Democracy are clashing. Unless stopped by Britain and the U.S. I fear that Romania will be doomed permanently to Russian domination with its resultant suppression of freedom of thought and action and that another 'Dark Age' more severe that that of medieval times will sweep over the considerable portion of Europe under Soviet domination. Unless some solution is found to compromise these opposing points of view and to eliminate the present minority suppressive government (in Romania), discontent and the seeds of a future World War will persist."

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EDITORIAL

Thoughts on Christmas

TELEVISION is perhaps the most revolutionary achievement of modern technology. Individuals and governments, institutions of science and religion, powers constructive in peace and destructive in war may equally apply the new means of communication for their purposes. If Caesar's advancing legions could have been watched on a television screen in the Roman Senate our world would certainly be different today. But would the modern man have peace of his soul? Will the advancement of technics bring the peace of mind to the man of the future? Will there ever be a Kingdom of God where all people live in good neighborhood and peaceful coexistence? Many religious leaders believe that human life can be influenced by spiritual powers; that the changed man will be finally imbued, and governed in his relation to others, by the ideas of humanity, equality, due proportion, impartiality, neutrality, independence and universality.

If television is put to good end, it can become an aid to schools in the instruction of many individuals, an instrument to keep the family from being dispersed, a tool to enable greater participation of communities in cultural and religious activities, and a magic wand to bring the secluded nations together. Thus, television could eliminate many obstacles that now oppose a peaceful coexistence. It could mean the beginning of a better age for which mankind has been sighing and longing through many centuries.

The greatest obstacle to the coming of this Golden Age is man himself. Technics and culture alone cannot help him. Of itself, culture is unable to raise up and to satisfy the higher man, because it has no power of infusing harmony and confidence into existence. The progress of engineering may abolish many dangers and help to avert others. Hygiene may prevent the spread of epidemics, and the improvement of communication may diminish the chance of famine. But, where culture is present alone, it brings scepticism and joylessness in its train. It makes man suffer the torments of Prometheus—the terrible feeling that he is just a helpless cog in the great wheel of world machinery; the consciousness of incomprehensible slavery; the amorph anguish of the heart and the monstrous fear engendered by spiritual void and emptiness.

Houses may be built with stone walls; homes are bounded by human souls and their emanations. Only toxic vapors arise from a soul which is unable to bridge the chasm between the animal and spiritual order of human life. There are many sick, poisoned souls in the modern world, souls that have become victims of faithlessness and its satellites, excess of subjectivism, sensuality, and spiritual senility. Indeed, for reaching its goal of peaceful coexistence, the world is in need not only of mental but also of *spiritual hygiene* of a higher order.

The Holy Scripture calls earthly life a flower, or a dream, and then again vanity, or military service. Yet, it still markedly stresses two aspects of human existence—its dependence upon a higher power, and the unshakeable confidence which flows from this dependence. The reorientation of the human soul in the radiance of faith preserves the flexibility of the soul, the alacrity of the will, the ardor of feeling, and the spirit of initiative. It prevents the many spiritual diseases, prejudice in judgment and taste, and it keeps Man's emotional life perpetually fresh and youthful.

For the believer, the rocky Cave in Bethlehem is a sanctuary of recollection and of

absorption in religious mysteries. The stable, the straw, and the Babe in the manger are also very real and very human. But, inspite of its setting in poverty and solitude, the Birth of the Child is forever the time to imbue all people with joyful jingle, light and gaiety. Christmas will always remain the symbol of youth and the source of spiritual alertness and enthusiasm, and of the incessant hope for a future world where there will be Peace to All Men of Goodwill.

ELEVENTH INTERAGENCY INSTITUTE FOR FEDERAL HOSPITAL ADMINISTRATORS

HELD AT WALTER REED ARMY MEDICAL CENTER, OCTOBER 24-NOVEMBER 10, 1955

Army Photo

First row (L to R): Mr. Victor E. Serino, USPHS; Mr. Nelson A. Jackson, VA; Col. Max Naimark, MC, USA; Mr. Reuben S. Newsome, VA; Col. Byron L. Steger, MC, USA (Director of Institute); Dr. Bascom Johnson, Jr., VA; Col. Lee F. Ferrell, USAF (MC); Col. Chas. L. Kirkpatrick, MC, USA; Col. Harry E. Deal, USAF (MSC).

Second row (L to R): Capt. Edward T. Knowles, MC, USN; Capt. Victor G. Colvin, MC, USN; Dr. David Salkin, VA; LCDR Stanley T. Richards, (Royal Canadian Navy); Col. Robert E. Selwyn, MSC, USA; Med. Dir. Sidney P. Cooper, USPHS; Mr. Archie E. Miller, VA; Col. Rollin L. Bauchspies, MC, USA; Dr. Raymond E. Smith, VA; Capt. Cecil H. Coggins, MC, USN.

Third row (L to R): Lt. Col. Harry A. Ferguson, MSC, USA; Capt. George F. Blodgett, MC, USN; Capt. Otto W. Wickstrom, MC, USN; Capt. James B. Butler, MC, USN; Dr. Jos. C. Tatum, VA; Dr. James E. Cottrell, VA; Col. Wm. B. Look, MC, USA; Sr. Surgeon James A. Finger, USPHS; Dr. Thomas J. Quigley, VA.

Fourth row (L to R): Lt. Col. John A. Booth, USAF (MC); Dr. Howard P. Morgan, VA; Lt. Col. J. L. Kinsman (Royal Canadian Army Medical); Mr. Emil W. Beelman, VA.

Fifth row (L to R): Med. Dir. Carl J. Mankinen, USPHS; Dr. Daniel R. Robinson, VA; Col. Chas. E. Melcher, USAF (MC); Col. Albert R. Dreisback, MC, USA; Dr. Murl J. Robertson, VA; Mr. Walter T. Altmann, VA; Surg. James R. Lewis, USPHS.

Around the World

By
CLAUDIUS F. MAYER, M.D.

RUANDA-URUNDI is the most easterly province attached to the government of the Belgian Congo. It is in close neighborhood with Lake Kivu and Lake Tanganyika. The rivers and the lakes of this part of Africa abound in the various genera and the larger species of planorbid snails which are the intermediary hosts of Schistosoma. Hence, the intestinal form of schistosomosis is endemic there, and man as well as animals suffers from the worm. Only the high plateaus of Ruanda and Urundi seem to be immune to the disease. Schistosoma haematobium and vesical schistosomosis had been imported to the Belgian Congo about 1925. Yet, vesical bilharziasis occurs in its light clinical forms only, and it does not produce the serious complications seen in Egyptain patients.

Before 1950 this province of the Belgian Congo was also frequently plagued by bacterial dysentery of the Shigella shigae variety. This species of the dysentery bacillus is now almost absent, owing to the extensive use of sulfa drugs. The bacteria that are now isolated from native cases of dysentery belong to other species of Shigella.

This part of Africa was the area of activity of a recent medical expedition by helicopter. The expedition, which was jointly sponsored by the Sikorsky Aircraft and the Lederle Laboratories, started from Leopoldville, Belgian Congo, on August 25 of this year. It was the first attempt to cross Central Africa in a helicopter. The expedition was carrying out on-the-spot medical surveys in the Congo, Ruanda Urundi, Kenya and Tanganyika. It ended late September in Nairobi, Kenya.

Africa is still a paradise (?) of diseases, and an excellent laboratory for medical experimentation, and for environmental studies. The Dark Continent is a demonstration of the complexity of etiology and pathogenesis. Thus, African observations show that tropical ulcer is a complex social disease in which environmental, economical, social and nutritional factors concur in producing an ailment characteristic of poverty. Wherever this ulcer thrives there is a very low grade of human development. The disease is prevalent in British and Italian Somaliland, the Sudan, Eritrea, Yemen, the coastal region of Aden, in Uganda, Nyasaland, Zanzibar, Tanganyika, Kenya Colony, also in French West Africa, the Gold Coast, Togo and Guinea.

The Italian rule in Somaliland resulted in better medical care for the natives. The Order of Maltese Knights recently erected a leprosarium in Gelib. The new hospital has 150 beds for the welfare of lepers. It was placed under the supervision of a young medical missionary from Padova. The Somalis are also the victims of various blinding eye-diseases. The Eye Department of the Mogadiscio General Hospital carried out a survey among its ambulant patients, and found that blindness is mostly due to injuries or diseases of the cornea, lens, and eyeball, while congenital amaurosis is rarely seen. Cataract and leukoma are quite frequent.

Blindness among African natives is frequently the result of optic atrophy of an obscure origin. This form has an especially high incidence among the people of Southern Rhodesia. Some observers ascribed it to deficiency in vitamin B. Recent studies of fifty such patients disproved, however, the supposion that nutritional deficiencies have anything to do with the disease of the optic nerve.

There is no doubt that malnutrition is widespread all over the world. A recent survey of infant-feeding in various countries revealed some interesting facts. Breast-feeding is usually prolonged among the poorer people in some countries, partly from the belief

that such a practice may prevent a new conception. The usual weaning age is not over 30 months, except in Northern Sudan (for girl babies only), also in India, China and Peru. Animal milks play little part in the feeding of the majority of poorer infants. At some places, there is a certain aversion to the use of eggs in the child's nutrition. Thus, the Coastal Arabs in Morocco use very little milk for feeding their infants, who are suddenly weaned and put on an indigestible diet of bread, bread paste fried in oil, and mint tea. In Burma and Thailand, there is a traditional dislike of milk. In Brazil, too, milk is very rarely given to infants. No wonder that malnutrition, including kwashiorkor, beriberi, marasmus, are very common in these countries.

Among the various culinary tricks that might be used for the prevention of deficiency diseases, especially of iron deficiency, there was one mentioned recently which deserves repetition. The iron content of foods may often be augmented by cooking them in an iron pot. Stewed apple, cut up with an iron kitchen-knife and boiled in an enamelled iron saucepan which is slightly chipped will become as good a source of iron as best roast beef. Survey of Bantu foods proved that much food articles gained in iron after being boiled in iron cooking-pots.

The Arab Medical Congress, which assembled in Alexandria, Egypt, from 29 July to 2 August, resolved that the language of instruction should be Arabic in the countries of the Arab League; at least the subjects of legal medicine and public health should be taught in that language since the practice of medical jurisprudence and health service require the knowledge of the local regulations which are published in the vernacular. Whether this resolution is a further step towards nationalism in the East, it remains an open question. Yet, since the same congress encouraged the national production of drugs and medical supplies, and a more rigid state control over the sale of drugs, it is not very difficult to detect the spirit of Arab nationalism in the background.

The global confusion about bronchial cancer and its relation to smoking is further increased by an announcement of the president of the International Cancer Research Institute of Australia (Dr. Smalpage) which claims that the cause of cancer is an abnormal chemical carbon. According to his hypothesis, the carcinogenic carbon's best antidote is phosphorus. Hence, he suggested the use of a saturated solution of "sunvitalized" phosphorus in oil, a remedy either for injection or for ingestion. Tobacco producers may agree with the Australian doctor that it is not the tabacco that causes the pulmonary trouble but the soot left by the burning paper of the cigarette.

Australia's peopleless vastness stimulated the Reverend John Flynn to create the Australian Flying Doctor Service. His dream was a medical service for everyone in the rugged "outback" land where there are often 90 miles between the front gate and the farmhouse. It requires some walking to provide medical care in a land where the density of population was 2.9 per square mile in 1952. The flying service, which operates by radio communication and airplanes, has about seven centers (six in a circle, and one right in the center of the continent, in Alice Springs). In 1947, the physicians who usually signed in for a 6-month or 12-month service, flew 195,000 miles. An average visit to a patient means, therefore, about 650 miles.

Our heartiest congratulations go to the Medical Journal of Australia, one of the medical magazines we are receiving in exchange, and to its distinguished editor, Dr. Mervyn Archdall, who recently completed the twenty-fifth year in the editorial chair of this important medical weekly of the Southern hemisphere. From a desperate letter sent to him in August, in the month of his celebration, it almost seems that the Australian Army Medical Corps is about to reach the fate of the dodo. The writer of the Letter to the Editor (Aug. 6, 1955) complained that the Australian Army is lacking in a trained cadre of medical officers, so that in case of

war an adequate medical service would be an impossibility.

Maj. Gen. F. Kingsley Norris, the Director-General of the Medical Services of the Australian Military Forces also took a grim view of the shortage of Australian Army doctors when, in an address to the physicians of Townsville, he reminded his audience of a national document produced some time ago by Lieutenant-General Sir Edmund Herring, Chief Justice of the Supreme Court of Victoria. This document, known as "The Call to the People of Australia" begins: "There are times in the histories of peoples when those charged with high responsibilities should plainly speak their minds. Australia is in danger." Indeed, said the Australian Director-General, the danger to Australia—both from without and from within—is very real. Both the political changes in Indonesia and the infiltration of the dreadful doctrine of dialetic materialism call for a special effort on the part of the physicians as General Norris pointed out.

The present procurement of medical officers for the military forces of Great Britain is also just short of desperate. The so-called Waverly Committee was set up in that country to review the arrangements for providing medical and dental services for the Armed Forces at home and abroad, in peace and war. The Committee recently has received the written and oral evidence submitted by the Council of the British Medical Association. The Council considered that a joint medical service of the three branches would be impractical in war and highly undesirable in peace. The increasingly specialized requirements of naval and aviation medicine are obvious obstacles.

On September 17, 1955, a memorial tablet was unveiled and dedicated at St. Leonard's Church, Shoreditch, England. This is the place where James Parkinson, born April 11, 1755, had been baptized, married, and then in 1824 buried. His tombstone had disappeared long ago. His house at No. 1 Hoxton Square, London, is now occupied by a factory. Until the unveiling of the new tablet, the only memory of his life was a pamphlet which he wrote in 1817 as his "Essay on the Shaking Palsy," the disease familiar to all of us as *Parkinsonism.*

The August strike of Austrian physicians and dentists against the government is without any precedent. This grave measure, until now known only to the ranks of labor union members, was ordered by the leaders of the Austrian Chamber of Physicians as a protest against the planned expansion of social insurance. It was felt that more insurance would mean the death of medicine as a free profession. Picket lines could be seen around the hospitals of Wien, and doctors were marching with banners and slogans. The strike-breakers were protected by a cordon of police, a measure which led the celebrated Professor Böhler to refuse to operate in the Emergency Hospital (Unfallkrankenhaus). Several incidents resulted in blood, and the number of casualties among the physicians was 25.

The recent reorganization of the medical services in the Territory of Papua and New Guinea continues to produce many interesting side-lines. The staff of the service is partly recruited from among the natives some of whom are already in possession of a little medical knowledge or are familiar with the ABC's of first aid. They are stationed in the towns and larger posts where they work either as "lik-lik-dokta" (little doctors) or as medical "tul-tuls" (medical tools or dressers), usually under the direction of a "big dokta" (medical officer).

As it can be expected, language presents a difficult problem, but a former teacher of the København Berlitz School of Languages undertook the task to teach the native medical orderlies of Papua how to speak, read and write Pidgin in a few weeks. *Pidgin English* becomes, thus, not only one of the Berlitz languages but one of the accepted tongues in the Papuan medical services. The Government Printing Office at Port Moresby published a book just recently as a textbook for the native schools of aid-post medicine. The book, written in Pidgin, is entitled "Aid-

Post Maresin." It is a pathetic, if not heroic, effort to bring civilization and the science of Hippocrates to these people. For the sympathetic reader here is a sample from the new textbook: "Fractures. Sopos bon i brok yu ken save kuiktaim. Peles i pen tumas. Em i solap, nay i no lain gut. . . . Sopos bon i brok long han skru i hadwok long save gut, olsem long leg long skru." (Fractures. If a bone is broken you can know it quickly. The pain is too much. The limb swells up and is no longer straight. . . . If a bone is broken at the wrist it is hard work to know it, all the same when bone is broken at the ankle). . . . *Multa paucis!*

GUEST SPEAKERS AND VISITORS

MILITARY DENTAL SYMPOSIUM, AMERICAN DENTAL ASSOCIATION CONVENTION, OCTOBER 1955

Army Photo

Front row (L to R): Col. Thomas A. McFall, Dir. Dental Div. Army Med. Res. Inst.; Brig. Gen. Dale B. Ridgely, Chief, Dental Serv. Letterman Army Hosp.; Brig. Gen. James M. Epperly, Dir. Dental Activ. Brooke Army Med. Center; Maj. Gen. Oscar P. Snyder, Chief, Dental Corps, USA; Lt. Gen. Robert N. Young, Comm. Gen. Sixth Army.

Second row (L to R): Col. Geo. N. Schulte, USAF (DC); Ass't Dent. Serv. Ent AFB; Brig. Gen. Paul I. Robinson, Comm. Gen. Letterman Army Hosp.; Brig. Gen. Marvin Kennebeck, USAF (DC), Chief, Dental Corps, Air Force.

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ASSOCIATION NOTES

Timely items of general interest are accepted for these columns. Deadline is 3rd of month preceding month of issue.

Department of Defense

Ass't *Secretary* (Health & Medical)—HON. FRANK B. BERRY, M.D.

Deputy Ass't Sec'y—HON. EDW. H. CUSHING, M.D.

MEDICAL SITUATION IS CRITICAL

A critical condition exists in the Armed Forces as a result of the loss of doctors. Many doctors have left the service and the losses can not be made up simply by numbers if that were even possible which now seems unlikely. This matter will be one of the first to be brought to the attention of Congress when it reconvenes in January. Some positive action will have to be taken but the measures are not too clearly defined. The service is simply not attractive to the younger man at this time; the older man who faces compulsory retirement at an age when he is yet active is taking advantage of retirement or even resignation to assure himself of remaining in the practice of medicine for a longer period of his life than now promised by the military service.

DOCTOR REQUIREMENTS

The Department of Defense has requested the Selective Service System to provide 297 Doctors of Medicine and 119 Doctors of Dentistry for the third quarter of Fiscal Year 1956. All will be assigned to the Army, the dentists during January 1956 and the physicians during April 1956.

SELECTIVE SERVICE CALL

The Selective Service System will call 18,000 men during December; 8,000 for the Army and 10,000 for the Navy. The Marine Corps and the Air Force do not intend to place calls with the Selective Service during December.

Army

Surgeon General—MAJ. GEN. SILAS B. HAYS

Deputy Surg. Gen.—MAJ. GEN. JAMES P. COONEY

GEN. GILLESPIE GETS SECOND STAR

Major General James O. Gillespie, Chief of the Professional Division, Office of the Surgeon General, received his second star on October 20.

General Gillespie entered the Army as a Reserve Officer on active duty, February 1, 1926 with his first station at Fitzsimons General Hospital. When the Japanese forces entered the Philippine Islands in World War II he was Chief of the Medical Service at Sternberg General Hospital, Manila. Later he became Commanding Officer of that Hospital. He was held as a prisoner of war of the Japanese for forty months, and finally released in Mukden, Manchuria in August 1945. In March 1953 General Gillespie assumed command of Letterman Army Hospital, San Francisco, and continued in that position until July 1955 when he was transferred to the Office of the Surgeon General.

GENERAL STANDLEE HONORED

The Swedish Government in special ceremonies at Pusan, Korea, recently honored Major General Earle Standlee, Surgeon U. S. Army Forces Far East, when the Medal for Merit in Silver was presented by Baron K.

G. Largerfelt, Swedish Minister to Japan. The medal was authorized by King Gustavus VI who cited General Standlee for his invaluable aid to the Swedish Red Cross in making their mission in Korea successful.

GENERAL DECOURSEY HONORED

Brig. General Elbert DeCoursey, Commandant of the Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas, and formerly Director of the Armed Forces Institute of Pathology, has become the first military man to be named to the Board of Governors of the College of American Pathologists.

General DeCoursey is an eminent pathologist and an authority in pathology of diseases resulting from the atomic bomb.

PERSONAL

Brig. General Frank E. Wilson, MC, USAR, became the executive vice president and secretary of the Joint Blood Council at its national headquarters in Washington, D.C., on November 1. He was formerly the director of the Washington Office of the American Medical Association.

The Joint Blood Council is a new nonprofit organization formed by the five national associations principally concerned with procuring, processing, preserving and distributing blood derivatives. Its objective is to coordinate all activities in this field.

Joined in the new venture are the American Association of Blood Banks, the American National Red Cross, the American Medical Association, the American Hospital Association, and the American Society of Clinical Pathologists.

The national headquarters of the Joint Blood Council, Inc., is at 1832 M Street, N.W., Washington 6, D.C.

CHANGE OF NAME

The Army Medical Service Graduate School has been redesignated "Walter Reed Army Institute of Research" as of November 1, 1955. This change of name further honors the famed conqueror of yellow fever, Major Walter Reed.

Major General Leonard D. Heaton, commander of the Center, has stated that there will be no change in the mission of the institution. The commandant, Brig. General John R. Wood will have two titles, Director of the Institute, and Commandant of the Institute's education and training activities.

The Walter Reed Army Institute of Research is an outgrowth of the first school of preventive medicine in the United States, the Army Medical School, of which Major Walter Reed was the first faculty secretary. From a modest start in 1893 when it was founded in downtown Washington the school has grown to an Institute with approximately 750 military and civilian personnel at the Walter Reed Army Medical Center.

COMMANDS TRAINING CENTER

Colonel Joseph U. Weaver, MC, has been designated as the commanding officer of the Medical Training Center which is a component of the Brooke Army Medical Center, Fort Sam Houston, Texas. Major General William E. Shambora commands the Center.

Colonel Weaver's former assignment had been Surgeon of the United States Army Forces in Austria.

REDESIGNATION OF MFSS

The Army Medical Service School is the new name for the Medical Field Service School at the Brooke Army Medical Center, Fort Sam Houston, Texas. The School was formerly located for many years at Carlisle, Pennsylvania, but in 1946 was moved to its present location at Brooke Army Medical Center.

Major General William E. Shambora is in command of the Center and Brigadier General Elbert DeCoursey is in command of the School.

DENTAL OFFICER TO SGO

Col. Leland G. Meder, formerly Dental Surgeon, USAFEUR has been assigned to the Office of the Surgeon General as Assistant Chief, Dental Division. He replaces

Colonel George F. Jeffcott who has been assigned to Fitzsimons Army Hospital at Denver.

DENTAL CONSULTANT

Dr. Francis J. Reichmann of Oklahoma City, was appointed a dental consultant to the Surgeon General of the Army. He has joined Dr. Thomas P. Fox of Philadelphia and Dr. John E. Buhler of Atlanta to make up a civilian advisory team on policies and procedures for the Army Dental Corps.

ASSIGNED TO EUROPE

Colonel William E. Jennings, VC, has been assigned as Chief Veterinarian to the European Command to replace Colonel Maurice W. Hale, VC.

Colonel Jennings has been Director, Department of Veterinary Science, Medical Field Service School, Brooke Army Medical Center, Fort Sam Houston, Texas since 1952. He is the military representative on the Council on Education of the American Veterinary Medical Association, and chairman of the Committee on Foreign Veterinary Colleges of that Council. He represents the Chief of the Army Veterinary Service on the National Board of Veterinary Medical Examiners. He has served a three-year tour of duty in the Office of the Surgeon General and a four-year tour with the Veterinary ROTC unit at Cornell University.

NO CONFUSION

No confusion is to exist in the serial numbers of the male officers of the Army Nurse and the Army Medical Specialist Corps since the men will have their numbers preceded by the initial "M." If you can not remember whether it is "Francis" or "Frances" for a man the Army will now help you. The designations before the serial numbers will be: MN for male nurse; MR for male dietitians; MM for male physical therapists; and MJ for male occupational therapists.

MEDICAL CONFERENCE

An important medical conference was held in October at Headquarters USAREUR COM Z when 50 delegates assembled to discuss matters dealing with emergency medical planning. Major General P. E. Gallagher, Com Z commander, told of the vital importance and responsibilities attached to their planning in the eventuality of a war."

Among those attending were: Maj. Gen. Alvin L. Gorby, USAEUR Surgeon; Col. Raymond H. Bunshaw, Seventh Army Surgeon; Col. Theo. M. Carow, Base Section Surgeon; Col. Michael L. Sheppeck, Com Z Surgeon; Lt. Col. Francis, Advance Section Surgeon; and Lt. Col. W. W. Hiehle, Seine Area Command Surgeon.

Observers from the Air Force were: Col. James W. Polington, Surgeon's Office, 12th Air Force, Col. E. D. Sandberg and Capt. R. W. Sharpe, Surgeon's Office, USAFE.

The moderator of the conference was Major James O. Darling, Com Z Medical Division Plans and Operations Branch.

PERMANENT INSTALLATIONS

Two Army posts have been designated as permanent installations recently.

Camp Rucker, Alabama, located near Dothan, Alabama is the site of the Army Aviation Center and the home station of the 351st Regimental Combat Team. This will now be known as Fort Rucker.

Camp Polk, Louisiana, was reactivated on November 1 and redesignated Fort Polk. The State of Louisiana has entered into an agreement with the Army to insure 15 year manuever rights to useable areas within a 7,000,000 acre tract.

Navy

Surgeon General—REAR ADM. BARTHOLOMEW W. HOGAN

Deputy Surgeon General—REAR ADMIRAL BRUCE E. BRADLEY

DIRECTOR PREVENTIVE MEDICINE

Captain Howard K. Sessions, MC, U. S. Navy, has assumed the duties of Director of the Preventive Medicine Division of the

Bureau of Medicine and Surgery. He relieved Captain James J. Sapero, who retired on November 1.

WOMAN DOCTOR BECOMES CAPTAIN

Commander Gioconda R. Saraniero, MC, U. S. Navy, is the first woman doctor to be selected for promotion to the grade of Captain in the Medical Corps of the Navy. At present she is on duty at the Infirmary, Headquarters Support Activities, Naples, Italy.

CIVILIAN DENTAL CONSULTANTS MEET

A meeting of honorary Civilian Consultants to the Surgeon General of the Navy was held on October 28 at the National Naval Medical Center, Bethesda, Maryland. Those attending were: Dr. Otto W. Brandhorst, St. Louis, Mo; Dr. Leslie M. Fitzgerald, Dubuque, Iowa; and Dr. Daniel F. Lynch, Washington, D.C.

TISSUE BANK INSTRUCTION

A six-months' course of instruction in Tissue Bank procedures for medical officers of the Regular Navy has been established at the Naval Medical School, National Naval Medical Center, Bethesda, Maryland.

CARDIOSCOPE AND CARDIAC STIMULATOR

A cardiac stimulator and cardioscope were recently developed at the Naval Hospital, Great Lakes, Ill., by conversion of a standard Navy Oscilloscope.

Capt. Victor G. Colvin, MC, Chief of Medicine, and Lieut. George Sutton, MC, USNR, Head of the Heart Station, supervised the ingenious conversion which was carried out by Chief Electronics Technician Wayne E. Connor of the Navy.

The device has been used successfully, by both the surgeon and anesthetist at the Great Lakes Naval Hospital, as a continuous monitor of cardiac action, during thoracic surgery.

TRAINING COURSES

There are over 72 Naval Reserve Officer schools throughout the continental naval districts for the training of Reserve Medical and Dental officers. Interested officers may attend these schools and still remain members of other Reserve units. This enables officers to accrue additional points for retirement. Another advantage is that fourteen days active duty for training with pay is available each year to all officers who are enrolled in these schools.

RETIRED

LCDR Russell G. Vliet, MSC, was placed on the retired list of officers of the Navy on October 1. He has been serving as Technical Information Officer in the Bureau of Medicine and Surgery. His successor is Lieutenant Robert W. Kentner, MSC.

Air Force

Surgeon General—MAJ. GEN. DAN C. OGLE
Deputy Surg. Gen.—MAJ. GEN. W. H. POWELL, JR.

ASSISTANT FOR DENTAL SERVICES

Brig. General James S. Cathroe, has been appointed Deputy Assistant for Dental Services in the Office of the Surgeon General of the Air Force. After graduation from the Creighton Dental School in 1928 he interned at Letterman Army Hospital. His former position was that of Command Dental Surgeon, Air Training Command, Scott Air Force Base.

DOCTOR SITUATION

Physicians and dentists currently on duty with the Air Force number 3,190 and 1,931, respectively. Of these 803 physicians and 278 dentists are members of the Regular component. The remainder are Reserve Officers.

At the present time requirements for reserve physicians on active duty have been met. The situation will likely change about March 1, 1956.

COMMENDATION RIBBON AWARDED

Major Herman S. Parish Jr., USAF (MC) was decorated with the Air Force Commendation Ribbon at a ceremony at the

School of Aviation Medicine, Randolph Air Force Base, Texas. The presentation was made by Brig. Gen. Edward J. Kendricks, commanding officer of the school.

Disturbed by the number of errors that were creeping into the medical examinations while he was director of the professional services at the Flying Training Air Force headquarters at Waco, Texas, Major Parish decided to do something about it. He prepared a manual known as "Guide for Physical Processing and Review of Medical Examinations" which has been approved by the Air Force Headquarters and distributed throughout the Medical Service.

On his visits to the command's nine contract flying schools Major Parish found that he could make certain organizational changes which would reduce medical personnel without impairing the quality of the professional services. It is estimated that he has saved the taxpayer $98,000 a year.

Military personnel cannot be given cash awards as are civilians since Congress has never approved such cash awards for the military personnel. Major Parish, however, can take personal satisfaction in having done a job well; he assumed the responsibilities of his office and waited for no one to point his duties out to him.

MALE NURSE COMMISSIONED

Ralph L. Malien of Little Valley, New York, recently received a commission as first lieutenant in the Air Force Nurse Corps. He is the first male nurse to be commissioned in that Corps.

Public Health Service

Surgeon General—LEONARD A. SCHEELE, M.D.

Deputy Surg. Gen.—W. PALMER DEERING, M.D.

EXAMINATION FOR VETERINARY OFFICERS

A competitive examination for appointment of Veterinary Officers to the Regular Corps of the Public Health Service will be held throughout the country on February 28, 29, and March 1, 1956. Appointments will be made in the ranks of Assistant and Senior Assistant with salaries of $6,017 and $6,918 (with dependents), respectively. Active duty as a Public Health Service officer fulfills the obligations of Selective Service. Deadline for filing application forms is February 3, 1956. Forms and further information may be obtained from the Chief, Div. of Personnel, Public Health Service, Dept. of Health, Education, and Welfare, Washington 25, D.C.

POLIOMYELITIS

The cumulative total of poliomyelitis cases from January 1 to October 22 was 25,727 compared with 33,078 for the corresponding period of 1954. Approximately 3,300 more cases can be expected for the remainder of the year. This will bring the total for the entire year of 1955 to approximately 29,000 which is not significantly different from the 1951 total of 28,386, the lowest in the past 5 years.

LASKER AWARD WINNERS

The American Public Health Association awarded six Albert Lasker Awards, one of which has gone to the Nursing Services of the Public Health Service. This group award cited Assistant Surgeon General Lucile Petry Leone, Pearl McIver and Margaret Arnstein for stimulating the whole postwar expansion of nursing service to the American public through pilot studies, continuing research and far-sighted programs for community protection.

Mrs. Leone set the pattern for expansion by organizing and directing the Cadet Nursing Program in World War II. Miss McIver guided the development of nursing programs in state and local health departments throughout the nation. Miss Arnstein directed the research which has accurately pin-pointed nursing needs and resources for the future.

INDIAN STUDENTS IN SANITATION

Thirty young Indians from 12 states have entered training at Phoenix, Arizona, to aid

in sanitation work among their people.

The training program is being operated with the cooperation of the Arizona State Health Department. This course is part of a newly expanded program to improve health conditions among the American Indians and the Alaskan Natives.

Dr. James R. Shaw, Chief of the Indian Division of the Public Health Service, in commenting on the program said, "the necessity for better sanitation on the reservations is pointed up by the high incidence of infectious diseases among the Indians. The Indian people have eight times more typhoid, 25 times more infectious hepatitis, and 22 times more dysentery than prevails among the general population."

VACCINE FOR COMMON RESPIRATORY DISEASE

The successful clinical trial of an experimental vaccine against one type of common respiratory illness has been announced jointly by the Public Health Service and The Johns Hopkins Medical Institutions. The research is still in the preliminary stage and the vaccine is purely experimental. There is no prospect for the production of the vaccine for public use in the near future.

This vaccine provides a substantial protection for human beings against *one* of the nine viruses in the APC (adenoidal, pharyngeal, conjunctival) group.

Veterans Administration

Chief Medical Director—WILLIAM S. MIDDELTON, M.D.

Deputy Chief Med. Dir.—R. A. WOLFORD, M.D.

ADVISORY COMMITTEE

An Advisory Committee on Research to counsel the Chief Medical Director concerning research programs conducted in the Veterans Administration has been announced.

The chairman is Dr. Joseph M. Hayman, Dean of Tufts College Medical School, Boston. Members of the committee are: Dr. J. Burns Amberson, consultant to the Chest Service of Bellevue Hospital, New York; Dr. Carol A. Moyer, Professor of Surgery, Washington University School of Medicine, St. Louis; Dr. W. Reece Berryhill, Dean, University of North Carolina School of Medicine, Chapel Hill; and Dr. Harold G. Wolff, Associate Professor of Psychiatry, Cornell University Medical College, New York.

HEART PUMP

A portable inexpensive heart pump has been developed by Dr. Frank Gollen of the Nashville, Tenn., Veterans Administration hospital. Over 500 successful non-human heart operations have been performed and the use of the pump on humans appears imminent.

The small machine not only does the work of the heart but also of the lungs since carbon dioxide is removed from the blood while oxygen is supplied to it. The only moving parts of the machine are a motor driven pump. In the use of the machine for surgery, the body temperature is lowered by a refrigerated coil in the pump system and thus a state of hypothermia is produced. When the heart temperature drops to 55 degrees F., it stops beating, permitting easier surgery than is possible with a beating heart. After surgery is completed and the blood is rewarmed the heart starts beating again.

Miscellaneous

GORGAS MEMORIAL INSTITUTE

At the recent meeting of the Gorgas Memorial Institute of Tropical and Preventive Medicine, Inc., held in Washington, Colonel Joseph F. Siler was reelected president, a post he has held since 1941. Other officers reelected were Maurice H. Thatcher, vice-president and general counsel; Dr. Walter A. Bloedorn, secretary; Hulbert T. Bisselle, treasurer; and Donald A. McCormack, assistant treasurer.

The Institute maintains an office at 1835 Eye St. N.W., Washington 6, D.C.

CHANGE OF NAME

Winthrop Laboratories Inc., is the new name of the firm formerly known as Winthrop-Stearns Inc., of which Theodore G. Klumpp, M.D. is president.

STATUS OF MEDICAL EDUCATION

There were 9,066 graduates serving internships for 1954-55, and 20,494 serving as residents in 1,364 hospitals according to the annual report of the Council on Medical Education and Hospitals of the American Medical Association. It seems that the trend of previous years, when unfilled positions of interns and residents were increasing in the hospitals, is now reversed. Almost half of the hospital vacancies in 1954-55 were filled by graduates of foreign medical schools, though.

EDUCATIONAL TELEVISION

Mr. Kevin McCann, special assistant to President Eisenhower, and president of Defiance College has said, ". . . within a few years, the educational resources of our schools and universities will be at the service of scores of millions who will need—beyond a TV set—only the desire and the perseverance to learn. Then, the inspiration and the genius of our greatest . . . teachers will . . . become available to tens of thousands of students. On television one instructor can teach . . . 30,000 as easily as 30 . . . (Educational TV is) an important answer to a manifest need, a gateway to golden benefits."

The total number of ETV stations is now 18 in the United States. The National Citizens Committee for Educational Television maintains headquarters in the Ring Building, Washington, D.C.

CRASH INJURIES SYMPOSIUM

The New York Academy of Medicine on February 2, 1956 at 8:30 P.M. will hold a symposium under the title "Automobile Accidents and Their Prevention." The meeting will be held in the Academy Auditorium, Hosack Hall, 2 East 103 St., in Manhattan. There will be no admission fee.

CONFERENCE

A "Conference on the Practical Utilization of Recorded Knowledge—Present and Future" will be held at the School of Library Science at Western Reserve University, Cleveland, Ohio, January 16-18, 1956. Registration fee is $10 per person. Address Dean Jesse H. Shera at the University for further information and for registration.

FELLOWSHIPS IN INDUSTRIAL MEDICINE

January 1, 1956 is the deadline for filing for Fellowships in Industrial Medicine particularly in the field of the atomic energy industry. Applicants must have graduated from an approved College of Medicine at least two years prior to beginning the tenure of the Fellowship, which will be arranged to begin about July 1, 1956. The stipend is $3,600 a year with extra allowances for dependents.

Further information can be obtained from Dr. Henry A. Blair, University of Rochester, School of Medicine and Dentistry, Rochester 20, New York.

DRUGS LIABLE TO PRODUCE ADDICTION

The World Health Organization's Expert Committee on Drugs Liable to Produce Addiction recently made its 5th report. Among other statements that were made the committee reported that the studies in the Union of Souh Africa have shown that permanent deterioration follows addiction to smoking cannabis, that its abuse is a forerunner of addiction to opiates, and that cannabis addiction is related to crime.

AMPHETAMINE SALE

The federal government has recently launched a campaign in an effort to suppress the illegal sale of amphetamines by filing charges against 42 persons in six states. It appears that sales of this drug have been made by certain cafes, service stations, and drug stores to truck drivers, and persons who have been involved in crime or juvenile delinquency.

WORLD HEALTH ORGANIZATION PUBLICATIONS

Infant Nutrition in the Tropics and Subtropics, Mono #29	$5.00
International Pharmacopoea. Vol. II	6.75
Dried BCG Vaccine, Mono #28	5.00
Bull. Vol. 12 #6-Serol. Analys. of Venoms, Antiven., Yaws, Cholera Studies	2.00
Chemotherapy of Malaria, Mono #27	3.25
Hosp. of Mental Patients	1.25
Legislation Affecting Psychiatric Treat. #98	.30
Alcohol and Alcoholism #94	.30
Cardiolipin Antigens, Mono #6	1.25
Malaria-World Problem	.70

Available from Columbia University Press, IDS, 2960 Broadway, New York 27, N.Y.

GOVERNMENT PUBLICATIONS

Isotopes—8 Year Summary	$2.00
Chemical Processing and Equipment (Nuclear reactors)	2.00
Handbook of the Hospital Corps No. D 206.6:H79/953	4.50
Ship's Med. Chest & First Aid No. FS 2.29:9/3	3.50
Stand. First Aid Course—Navy No. D 208.11:F51/3	1.00
Prev. Med. WWII—Vol 2—Env. Hyg. No. D 104.11:P92/v.2	3.50
Army Dental Serv. WWII No. D 104.11:D43	3.25

Any of the above can be obtained from the Supt. of Documents, Govt. Printing Off., Washington 25, D.C.

New York Chapter

The New York Chapter of the Association of Military Surgeons held its annual meeting at the Fort Jay Officer's Club, Governor's Island, New York, on October 28.

A delightful buffet dinner was served after which there was a business meeting with the president of the Chapter, Colonel Arthur L. Streeter, USAF (MC), presiding. Brigadier General Harold W. Glattly, Surgeon of the First Army introduced the honored guests, Major General James P. Cooney, Deputy Surgeon General of the Army, and Colonel Robert E. Bitner, Secretary of the Association which maintains headquarters in Washington, D.C.

General Cooney spoke of the acute shortage of doctors which is creating a critical condition in the medical services of the Armed Forces. Colonel Bitner related some of the problems which were facing the national organization and how they were being solved.

Officers elected for the year are: Lieut. Colonel George G. Trattner, DC, USAR, president; Colonel George M. Leiby, MC, NYNG, first vice-president; Brig. Gen. Harold W. Glattly, MC, USA, second vice-president; Captain H. Easton McMahon, MC, USNR, secretary; Colonel Francis N. Kimball, MC, USAF, Hon. Res., treasurer.

Executive Council members are: RADM H. J. van Peenen, MC, USN; Brig. Gen. Harold H. Twitchell, USAF (MC); Capt. Harold O. Young, MC, USN; John Wilson, Medical Director, USPHS; Colonel Wilbur Smith, USAF (MC); Colonel James Q. Simmons, MC, USA; Colonel Charles K. Morris, USAF (MC); Capt. J. Arnold de Veer, MC, USNR, Ret.; Col. John S. Davis, Jr., MC, USAR; Col. Arthur H. Corliss, USAF (MC); Donald W. McNaughton, Medical Director, USPHS; Capt. Harold R. Merwarth, MC, USNR; Capt. Morris Brooks, MC, USNR, Ret.; Lt. Col. Hubert W. Miller, USAF (MC); CMDR Samuel Candel, MC, USNR.

Honor Roll

Since the publication of our last list, the following sponsored one or more applicants for membership in the Association:

Capt. Harold M. Allen, MSC, USA
Cdr. Geraldo Barroso, MC, Brazilian Navy
Col. Joseph W. Batch, MC, USA
Col. Robert E. Bitner, USA, Ret.

Max Blumer, M.D.
Col. Roosevelt Cafarelli, MC, USA
Major Gen. James P. Cooney, MC, USA
Gilson C. Engel, M.D.
Lt. Col. Morton Gittleman, MC, AUS
Major Edward Glashagel, MC, AUS
Brig. Gen. Harold W. Glattly, MC, USA
Col. William D. Graham, MC, USA
Col. R. E. Hewitt, MC, USA
Col. Paul E. Keller, MC, USA
Major R. Klotzman, USAF (MSC)
Col. William C. Knott, MC, USA
LCdr. Frances L. Little, (NC), USN
Capt. Julian Love, MC, USN
Lt. Col. Hilda M. Lovett, AMSC
Brig. Gen. J. A. McCallam, USA, Ret.
Lt. Col. I. H. Marshall, MC, USA
Lt. Girard F. Nardone, MC, USNR
Rear Adm. John Q. Owsley, MC, USN
LCdr. Hilson C. Perisse, MC, Brazilian Navy
Lt. Col. John Plum, MC, USA
Col. Arthur J. Redland, MC, USA
Lt. Col. Alice J. Robbe, ANC
Dr. William Ross, USPHS
Col. Louis F. Saylor, MC, USA
Sr. Phar. John A. Scigliano, USPHS
Col. M. B. Starnes, VC, USA
Dr. Gilbert Stevenson
Major Edward J. Tomsovic, MC, USA
Lt. Col. Colin F. Vorder Brugge, MC, USA
Col. Edgerton L. Watson, VC, USA
Major Gen. J. M. Willis, USA, Ret.
Lt. Col. I. Jacques Yetwin, MC, USAF
Col. Abner Zehm, MC, USA

OBITUARIES

Capt. Otto W. Grisier, U. S. Navy, Ret.

Otto Woodson Grisier, Captain, U. S. Navy, Retired, died September 11 at his home in Santa Barbara, California, at the age of 68 years.

Captain Grisier was a native of Indiana. He received his medical degree from the Harvard Medical College in 1913. He was appointed an Assistant Surgeon in the Navy on September 6, 1917, promoted to the grade of Captain in 1942, and was retired September 1, 1946, for physical reasons. During World War I, he served on the USS *Louisiana* and at the Naval Dispensary in Paulliac, France. During World War II he served as the Senior Medical Officer on the USS Sperry and in the South Pacific. He is survived by his widow, Mrs. Grace Belle Grisier, 106 San Clemente St., Santa Barbara, California.

Interment was at Santa Barbara, California.

Capt. John V. McAlpin, U. S. Navy, Ret.

John Volney McAlpin, Captain, U. S. Navy, Retired, died at the Veterans Administration Hospital, Bay Pines, Florida, on October 3 at the age of 72 years.

Captain McAlpin graduated from the Western University of Pennsylvania Dental School in 1904. He was commissioned in the Navy Dental Corps in 1914 and retired from the service on December 31, 1942 in the grade of Captain. However he remained on active duty for almost two years. He was the first Navy dental officer to assume a dental command when he took over the Naval Dental School, Washington, D.C. at the time it was commissioned in April 1936.

Interment was at Arlington National Cemetery.

Capt. William E. Eaton, U. S. Navy, Ret.

William Edward Eaton, Captain, U. S. Navy, Retired, died in the U. S. Naval Hospital, Bethesda, Maryland, on October 19 at the age of 72 years.

Captain Eaton was born at Newburyport, Mass., on November 7, 1882. He received his medical degree from Harvard Medical School in 1904. In 1910 he entered the Navy as an acting assistant surgeon, and, although placed on the retired list on October 1, 1943, continued on active duty. He was released to inactive duty on February 28, 1950.

He is survived by his wife, Mrs. Fanny F. Eaton, 2300 Connecticut Avenue N.W., Washington, D.C.

Interment was at Arlington National Cemetery.

Col. William C. Porter, U. S. Army, Ret.

William Clare Porter, Colonel, U. S. Army, Retired, died at Los Lunas, New Mexico, on September 24 at the age of 69 years.

Colonel Porter was a native of New York. He graduated from the Albany Medical College in 1907 and served with the New York State Hospital Service from 1908-1918 when he entered the Army Medical Corps.

Colonel Porter had a long experience in the field of psychiatry, both civilian and military. As director of the School of Military Neuropsychiatry, Atlanta, Georgia, and Fort Sam Houston, Texas he was influential in the teaching of many military physicians in that field. He was author of many articles on psychiatry.

After retirement Colonel Porter became the Superintendent of Los Lunas Mental Hospital.

He is survived by his widow, Mrs. Aimee Porter of Los Lunas, and a son, Major William Porter, U. S. Marine Corps.

BOOK REVIEWS

LA MASSE SANGUINE ET SA PATHOLOGIE. (In French). By P. Cazal. 328 pages with 92 figures. Masson et Cie, Publishers. Paris. 1955. Price 2.400 fr.

This 328 page book on blood volume and its pathology is the first of a series to be prepared by the Faculty of Medicine of Montpellier embracing the field of hematology. It is to be followed by five others: L'Hémostase, la Coagulation et leurs troubles, Hémotypologie of Immuno-hématologie, Les Erythrocytes et leur pathologie, and La Transfusion sanguine. Dr. Cazal has divided the subject matter into 14 chapters. The first five chapters are devoted to methods and interpretation of studying the physical-chemical properties of blood. Of the physical properties, the density, viscosity, stability, the volume of the blood and its constituents are discussed in detail. Of the chemical properties the electrolytes and proteins, their significance and their role in the osmotic equilibrium of the blood are presented. The hemodynamics of the circulation is the subject of Chapter V. The greatest portion of the book is devoted to the pathology of the blood volume in shock and plasma loss in burns. The shock state is considered in detail both from a theoretical as well as a practical point of view. Chapter XIV is devoted to therapy. The plan of the volume is unusual but the material is concisely presented and should be of functional value to those working with problems of blood volume.

LT. COL. JOS. H. AKEROYD, MSC, USA

REALISTIC COMBAT TRAINING AND HOW TO CONDUCT IT. By Lt. Col. Robert B. Rigg, USA. 239 pages, illustrated. The Military Service Publishing Co., Harrisburg, Pa. 1955. Price, paper back, $2.75; hard back, $3.50.

Though the first edition is fresh from the press and the content is as modern as the atomic field army, this book has the appearance of an old friend. The typography is familiar to any reader of the "Military Medical Manual," and the writings of Colonel Rigg are known to the readers of almost every service journal.

The paper is excellent; the illustrations are numerous, clear, and well integrated; but the greatest content of the book is its spirit. With the great zest of a true professional in his specialty (or, some will exaggerate, with ghoulish glee) Colonel Rigg gives recipes, plans, and formulae on how to conduct combat training without the stimulus of actual combat. As he states it, the "problem is to duplicate combat conditions without killing off the class." The mission of the text is "to provide imaginative ideas." It fulfills this mission. These ideas can be used just as well in training medical units as in training the combat arms.

LT. COL. DOUGLAS LINDSEY, MC, USA

ESSENTIALS OF ORTHOPAEDICS. 2nd Ed. By Philip Wiles, MS (Lond.), F.R.C.S., F.A.C.S., Senior Orthopaedic Surgeon, The Middlesex Hospital, London. 538 pages with 7 color plates and 393 text figures. Little, Brown and Company, Boston and Toronto. 1955. Price $10.00.

In this edition, the author has revised the text to include current concepts in Orthopaedics. New subjects have been included along with improved and additional illustrations. As in the first edition the author has confined himself to the physiological and pathological aspects of each disease entity as applied to diagnosis and treatment.

The text is primarily written to assist the general practitioner, the undergraduate student, and the postgraduate who is beginning his surgical training, to obtain an orderly concept of the large field of orthopaedics.

In the first chapter emphasis is placed on postural defects, their etiology and treatment. This is followed by a consideration of the pathology and treatment of orthopaedic conditions as they apply to each region of the body. Pyogenic infections, tuberculosis, chronic arthritis, tumors of bone, diseases and congenital defects of bone, and diseases of the nervous system are well organized in additional separate chapters.

The discussion of each subject is presented in a concise, clear, orderly manner which is easily read and understood. Details of descriptions and surgical treatment are omitted; however, sufficient information on prognosis and methods of treatment are included to

assist the general practitioner to begin or advise sound treatment.

The author has been successful in his aim of organizing a concise, practical text of orthopaedics which may be used as a ready reference book. The illustrations are clear and adequate. There is no separate bibliography; however, references are made throughout the text to various authors and these references are included in an excellent index.

This book should well serve the purpose for which it was written. It is recommended as a text book for medical students and should be in the library of every orthopaedic surgeon and on the desk of each general practitioner as a ready reference book.

COL. JOSEPH W. BATCH, MC, USA

PSYCHOLOGY IN NURSING. By Wendell W. Cruze, Ph.D., Professor of Psychology, Wilson Teachers College. Foreword by Lucile Petry Leone, RN, USPHS. 494 pages. The Blakiston Division, McGraw-Hill Book Co., Inc., New York, Toronto, London. 1955. Price $5.50.

In tempo with the increasingly changing characteristics of our age, nursing is undergoing a revolution. Patients have ceased to be labeled as "that fussy gall-bladder in 202," or that "cranky old cardiac in 210." The modern nurse, having had psychology as a part of her curriculum, has learned to understand and interpret the dynamics of human behavior. She has learned that negative emotions need be expressed. Her insight into the emotional needs of her patients, as well as understanding her own needs and attitudes, have increased her value as a therapeutic tool in providing a therapeutic atmosphere for her patients. Stressed everywhere are Interpersonal Relations, The Team Approach, and Nurse-Patient Relationships.

Dr. Cruze in his "Psychology in Nursing" has written a scientific text for nurses that is clear, concise, comprehensive and very readable. Simplicity is its keynote. The author emphasizes the application of important concepts and principles of psychology, defining their practical values to the nurse in solving nursing care problems and in developing the skills that will aid her in planning total nursing care for her patients.

Dr. Cruze has divided his book into eighteen chapters which are clearly marked, and whose subheadings are in bold black type facilitating the reader to spot pertinent facts. The brief summary preceding each chapter acts as a more effective guide to study.

A comprehensive list of references is included with every chapter, as well as a glossary and a list of visual aids at the end of the book.

The chapters on the psychological aspects of nursing children, adolescents, chronic and aged patients, will enable the nurse to develop insight into and anticipate the emotional needs of these varied groups, thus making the resolution of their emotional problems simpler and more expedient.

The result is stimulating! As a learning tool, this well written text of the highest quality can be read most effectively by students, or graduate nurses having any responsibility for programs in nursing.

CAPT. LA WANDA RAABE CUSH, ANC

SURGICAL FORUM—PROCEEDINGS OF FORUM SESSIONS FORTIETH CLINICAL CONGRESS OF THE AMERICAN COLLEGE OF SURGEONS 1954. 851 pages. W. B. Saunders Company, Philadelphia and London. 1955. Price $10.00.

The 1954 Surgical Forum volume is published under the auspices of the American College of Surgeons by the Committee on Forum on Fundamental Surgical Problems. The papers that were presented at the Clinical Congress of the American College of surgeons are concerned with new ideas, experiments and developments in the various surgical fields. There are a great number of papers dealing with the heart and great blood vessels, circulation, and vascular grafts. There is also considerable emphasis, as in the past years, on nutrition, body fluids and metabolism. The other surgical problems of physiology and anatomical location are considered in relation with the gastrointestinal tract, cancer, anesthesia, burns, and shock.

As Dr. I. S. Ravdin states in the Foreword, this book provides written testimony of the directions of surgical effort and investigation in this country. The proceedings make up a valuable book for those trying to keep abreast of new developments in the surgical field.

RAY BROWN, M.D., F.A.C.S.

PSYCHIATRY FOR THE FAMILY PHYSICIAN. By C. Knight Aldrich, M.D., Associate Professor of Psychiatry, University of Minnesota Medical School. 265 pages with 19 diagrams. The Blakiston Division, McGraw-Hill Book Company, Inc., New York and London. 1955. Price $5.75.

This book is based on the currently ac-

cepted principles of psychodynamic psychiatry. The contents are organized into three parts.

Part I describes the emotional meaning of illness. The bodily changes of emotional states and the emotional significance of illness are both well related to the every-day problems of medical diagnosis and treatment.

Part II deals with emotional growth and development. A knowledge of the patient's level of emotional development enables the physician to carry out his treatment in a psychologically helpful manner, even though the patient's personality problem is not attacked directly.

Part III describes the diagnosis and treatment of the emotional factor in illness. It is emphasized that the emotional factor cannot be diagnosed solely by exclusion of organic disease. Treatment is described under (1) Psychological Support, (2) Environmental Modification, (3) Intensive Psychotherapy with the goal of personality maturation and relief from symptoms.

This book describes the emotional factors in medical practice in a clear and practical manner that meets the needs of every physician whether in general practice or in special practice. It is highly recommended.

COL. JOHN CHORNYAK, MC, USA

DISEASES OF THE EAR, NOSE AND THROAT. 2nd. Ed. By William Wallace Morrison, M.D., Professor of Otolaryngology and Director of Dep't., New York Polyclinic Postgraduate Medical School. 756 pages, 359 illustrations. Appleton-Century-Crofts, Inc., New York. 1955. Price $10.00.

Although this book has been written for the undergraduate medical student and general practitioner, the specialist in the subject will find much of value in this text. Rare diseases are not emphasized, but the usual pathology that the average physician meets is stressed. In order to meet this aim, the author has concentrated his material and presents it from a practical rather than theoretical viewpoint.

In presenting the subject the anatomy of the area is reviewed, followed by the physiology, then etiology, signs and symptoms. In addition to the usual diseases of ear, nose, and throat which are covered in most volumes, the author has included allergic diseases of the respiratory tract; diseases of the trachea, bronchi, esophagus, and mediastinum; and a very sensible evaluation of the various antibiotics.

A separate subject and symptom index is included. The subject index is quite interesting to read. For example: "Breaking of the Voice"—characterized by uncontrollable change in pitch of a sustained note, noted in: Dysphonia spastica (page 611); Paralysis of thyro-arytenoid muscles (page 617); Vocal nodules (page 576).

Nothing is taken for granted in this book. Even the method of winding cotton around an applicator is explained in detail with illustration. This reviewer has removed many cotton wads from ear and nose that had been lost for periods of time and found on routine check at a city ear clinic. So it would appear that attention should be placed on simple things as well as "big" surgery.

An excellent formulary with many helpful prescriptions is included. Simple illustrations which explain more than diagrams are profusely scattered throughout the text. At the end of each chapter adequate references may be found. This volume is highly recommended.

PHILIP H. SMITH, M.D.

ORGANIC CHEMISTRY SIMPLIFIED. 2nd Ed. By Rudolph Macy, Ph.D., Chief, Chemical Division, Chemical and Radiological Laboratories, Army Chemical Center. 611 pages. Chemical Publishing Company, Inc., New York. 1955. Price $12.00.

This book was prepared with the intent of basing presentations on the new electron theory. It will be somewhat confusing at first to scientists who have not kept abreast of the developments in physical chemistry and their applications to organic fields. The author recognizes this by dividing the book into 4 parts, discussing the *Unique Position of the Carbon Atom*, the architecture, the classification and special topics of more complicated organic molecules. As a preparation for following this, the author has presented an introductory section for each paragraph at the start of each of the four parts, explaining very understandably the development of the electron theory and its application to this section. After mastering the Octet and the Duet approaches, the book proceeds very systemically to develop valence, straight chains and rings, and the geography of the benzene ring. From this start, the more complicated structures are developed, considering the resonance approach. It then passes to discussion of isoprene, proteins, carbohydrates, dyes, drugs, hormones and vitamins. It closes with an interpretation of isotopes and giant molecules.

This is a valuable reference work, after

mastering the electron theory. It is well written, and seems to cover the field very comprehensively. Some of the statements in connection with the action of drugs are given from the standpoint of the chemist rather than of the pharmacologist. Each chapter has several pertinent references to supplement, whenever indicated. The will serve as a review of advances in physical chemistry as well as organic.

JAMES C. MUNCH

THE RURAL HOSPITAL: ITS STRUCTURE AND ORGANIZATION. By Dr. R. F. Bridgman. (*World Health Organization:* Monograph Series, No. 21.) 162 pages. Columbia University Press, New York. 1955. Price $4.00.

This most excellent publication is not only comprehensive and well-documented, but is also extremely readable. It moves along at a pace which is unusual in such a scientific study. Dr. Bridgman has organized the material he presents in such a fashion that the concept which he advances of the rural community's "health center" is entirely logical. This health center would provide not only the classical care of the sick, but would also include many aspects of public health activities such as outpatient clinics, maternal and child welfare services, social disease control, and the entirely preventive medicine function of educating the public in sanitation and health measures.

The problems and principles of staffing and administration, supplies and equipment, architecture, construction, and location are all discussed in some detail as they might be applied to the modern rural hospital.

Dr. Bridgman approaches the subject of the rural hospital from a sociological as well as a medical point of view. His grasp of the problems of securing good medical care for rural areas and the solution he proposed will be particularly applicable to the undeveloped areas of the world, but could be used to great advantage in many rural areas of the United States.

CAPT. ROGER L. ROTHROCK, MSC, USAR

PRACTITIONERS' CONFERENCES. Held at The New York Hospital-Cornell Medical Center. Vol. I. Edited by Claude E. Forkner, M.D., F.A.C.P., Professor of Clinical Medicine, Cornell University Medical College. 411 pages. Appleton-Century-Crofts, Inc., New York. 1955. Price $6.50.

This volume is a report of the first series of Practitioners' Conferences on important medical topics held at the New York Hospital-Cornell Medical Center. Editor Claude Forkner, M.D., conceived and initiated these excellent panel discussions by selected medical authorities for the benefit of practicing physicians who desired to attend and take part in them. Volume I covers reports of the conferences on Influenza and Primary Atypical Pneumonia, Harmful Effects of Tobacco, Newer Drugs in the Treatment of Malignant Disease, Coronary Thrombosis, Sinusitis, Breast Nodules, Asthma, ACTH and Cortisone, Poliomyelitis, Tuberculosis, Headaches, Diabetes, Acidosis and Disorders of the Feet.

These weekly clinics were informal, clinical in nature and were designed to be comprehensive enough to help practitioners treat at home many patients now being treated in hospitals or large medical centers. Patients were introduced and cases were discussed in typical clinical style with brief reviews of the entire subject under consideration. A review of these conference reports should prove beneficial to all physicians and greatly aid practitioners in the home and office management of their patients.

COL. H. P. MARVIN, USA, RET.

THE PRACTICE OF DYNAMIC PSYCHIATRY. By Jules H. Masserman, M. D., Professor of Neurology and Psychiatry, Northwestern University School of Medicine. 790 pages. W. B. Saunders Company, Philadelphia, 1955. Price $12.00.

This textbook is a refreshing exposition of "the all embracing field of psychiatry," and, as the author states, he has tried to present "the greatest current task of psychiatry: the enlistment of the psychiatrist's knowledge of and respect for humanity in the challenge of keeping mankind alive and happy here on earth." He divides the book into five parts, with an appendix and thirty-nine chapters, illustrated with one hundred fourteen case reports. He makes frequent reference to his previous book, entitled, PRINCIPLES OF DYNAMIC PSYCHIATRY, and refers to the forty cases presented in his previous volume. Although the author is a trained psychoanalyst, he is certainly not dogmatic in his presentation and pleads for a more sane outlook in psychoanalytic practice. He emphasizes the necessity of the psychiatrist primarily being a physician, calling on all the knowledge now available to the medical profession.

Although the first four sections of the book, composed of twenty chapters, are im-

portant to the physician and psychiatrist who may be interested in getting Masserman's viewpoint, nevertheless the essential parts of his treatise are found in Part Five, when he discusses "the practice of dynamic psychotherapy." His review of the current status of analytic psychotherapy is unbiased, although there is no doubt that the strictly Freudian analysts are apt to take exception to his conclusions.

On page 488 the author well states: "If it were required to condense the dynamic principles of therapy into a single sentence, the following could serve as a practicable maxim: By every ethical means available (a) make the patient's neurotic conduct seem no longer either necessary or profitable to him and (b) help fill the void of adaptation thus created by encouraging new patterns of achievement that he will eventually adopt as personally and socially preferable to the old.

"To obtain these objectives, the therapist must:

"(1) Use every available medical resource to help restore health and vigor, thus increasing the patient's capacities to cope with his milieu.

"(2) Employ every social influence to help remove intercurrent obstacles, thus diminishing unnecessary frustrations and conflicts.

"(3) Utilize the patient's anxieties and resultant dependent and communicative needs as proferred entrees into his personal universe of desires, meanings, values and actions.

"(4) Help the patient explore, organize and master these until he has acquired sufficiently satisfactory values and patterns of transaction and requires no further professional aid."

To any physician interested in a clearer understanding of the practice of psychiatry, this book can be highly recommended. It is easily read, and, although some parts are somewhat verbose, the author generally has avoided technical terminology.

COMMANDER JAMES L. MCCARTNEY
MC, USNR, RET.

AN ATLAS OF MUSCULOSKELETAL EXPOSURES. H. F. Moseley, M.A., F.R.C.S.; F.A.C.S. Hunterian Professor, Royal College of Surgeons, of England; Ass't. Prof. of Surgery, McGill University. 235 pages, 376 illustrations in color. J. B. Lippincott Company, Philadelphia and Montreal. 1955. Price $22.50.

This book is more than an atlas of musculoskeletal exposures. It begins with a chapter on preoperative preparation, preparing the patient, arrangement of the operating room, draping, non-touch technic, incisions, closure, and other general matters. Starting with the face and proceeding through the upper extremity, the trunk, and lower extremity, the author shows drawings and photographs of areas of preparation, technic of draping, with detailed color illustrations of points in anatomy as well as technical steps in the commoner orthopedic operations. Proper incisions are depicted, including special positioning for operations on the spine, hip, etc. An adequate reference list follows each chapter, the photographs are clear, the color anatomical drawings are suitably descriptive, and the index is adequate. "The atlas was designed to present in visual form, with adequate descriptive text, the detailed anatomic relations of the bones and joints of the face, upper extremity, vertebral column, and lower extremity." This end is achieved and the book should be valuable to orthopedists and others interested in the surgery of the musculoskeletal system.

COL. WARNER F. BOWERS, MC, USA

NEW BOOKS

Mental Hygiene in Public Health, by Paul V. Lemkau, M.D. McGraw-Hill Book Company, New York, N.Y. Price $8.00.

Henry Ford Hospital International Symposium on Cardiovascular Surgery. Edited by Conrad R. Lam, M.D. W. B. Saunders Co., Phila., Pa. Price $12.75.

Cardiac Diagnosis, A Physiologic Approach, by Robert F. Rushmer, M.D. W. B. Saunders Co., Philadelphia, Pa. Price $11.50.

Basic Surgical Skills, A Manual with Appropriate Exercises, by Robert Tauber, M.D., F.A.C.S. W. B. Saunders Co., Philadelphia, Pa. Price $3.75.

Dried BCG Vaccine, by Yoji Obayashi, Columbia University Press, New York, N.Y. Price (cloth) $5.00.

Infant Nutrition in the Subtropics and Tropics, by D. B. Jelliffe. Columbia University Press, New York, N.Y. Price (cloth) $5.00.

Preventive Medicine in World War II. Vol. II Environmental Hygiene. Supt. of Documents, U. S. Government Printing Office, Washington, D.C. Price $3.50.

Introduction to Virology, by Gilbert Dalldorf, M.D. Charles C Thomas, Publisher, Springfield, Ill. Price $3.50.

The Shoulder and Environs, by James E. Bateman, M.D., F.R.C.S.(C), The C. V. Mosby Co., St. Louis, Mo. Price $16.25.

Physician's Handbook, 8th ed., by Marcus A. Krupp et al. Physicians' Record Co., Chicago, Ill. Price $2.50.

Peripheral Nerve Injuries, edited by H. J. Seddon. Reviewed by Webb Haymaker, M.D. in October, 1955 issue of MILITARY MEDICINE. Obtainable from British Information Service, 30 Rockefeller Plaza, New York 20, N.Y. Price $10.22 prepaid.

The Medical Staff in the Hospital, by T. R. Ponton, revised by M. T. MacEachern, M.D. Physicians' Record Co., Chicago, Ill. Price $7.25.

Pharmacopoea Internationalis, Editio Prima, Vol. II. World Health Organization, Geneva. Price $6.75.

Operative Technic in General Surgery, Edited by Warren H. Cole, M.D. 2nd Ed. Appleton-Century-Crofts, Inc., New York, N.Y. Price $20.00.

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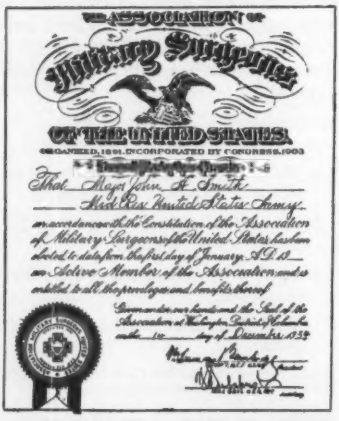

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Drake, F. R., and Ebaugh, F. G.: Ann. New York Acad. Sc. *61*:198 (April 15) 1955.

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Drake, F. R., and Ebaugh, F. G.: Ann. New York Acad. Sc. *61*:198 (April 15) 1955.

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Harris, R.: Ann. New York Acad. Sc. *59*:95 (April 30) 1954.

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VOL. 117 December, 1955 NO. 6

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Official Publication · Association Military Surgeons of the United States

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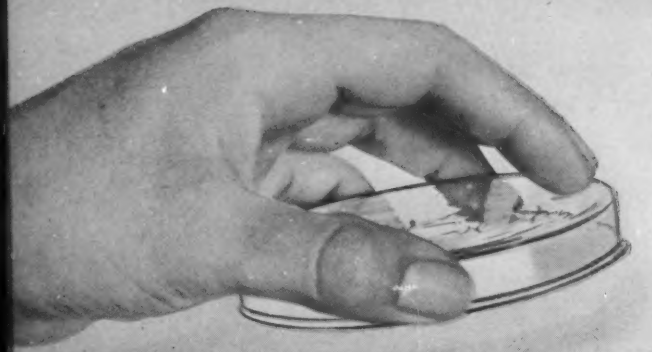

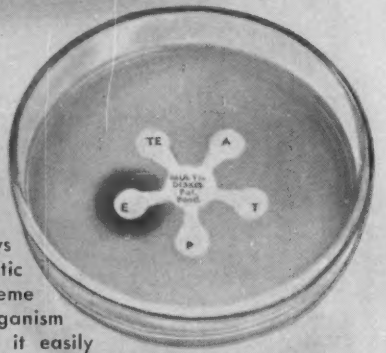

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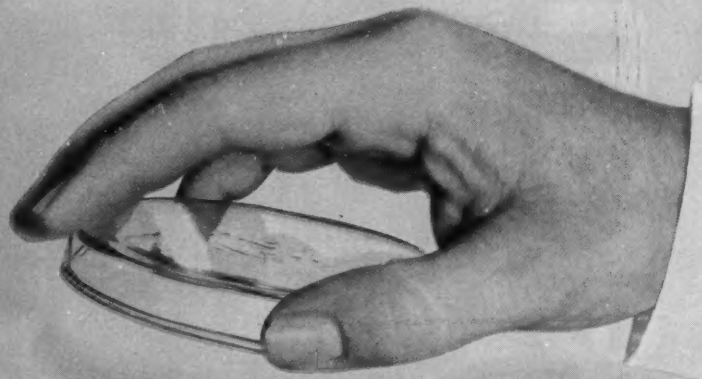

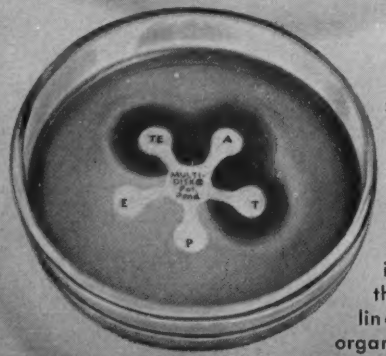

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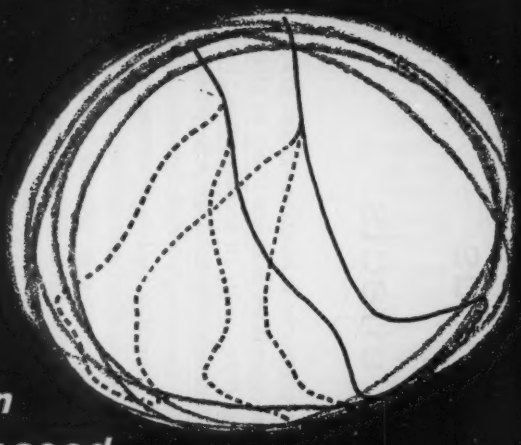

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1. Forsham, P. H., et al. Paper presented at First Internat. Conf. on Prednisone and Prednisolone, New York, N. Y., May 31-June 1, 1955.

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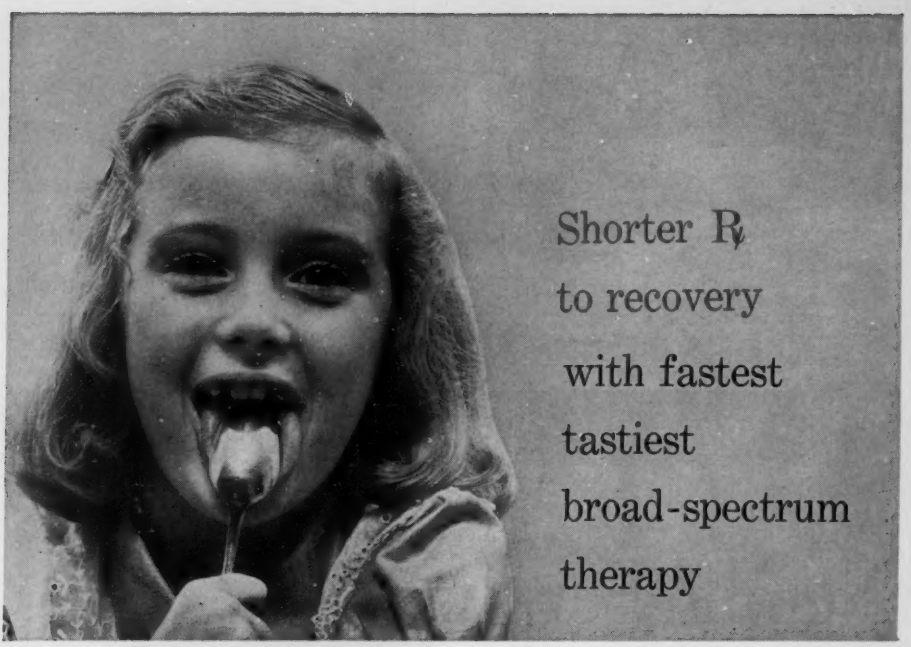

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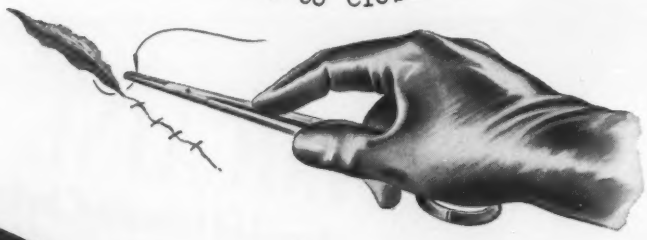

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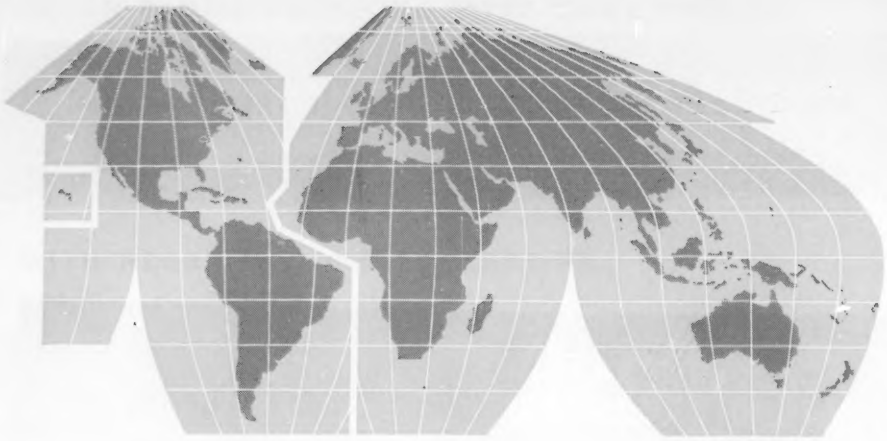

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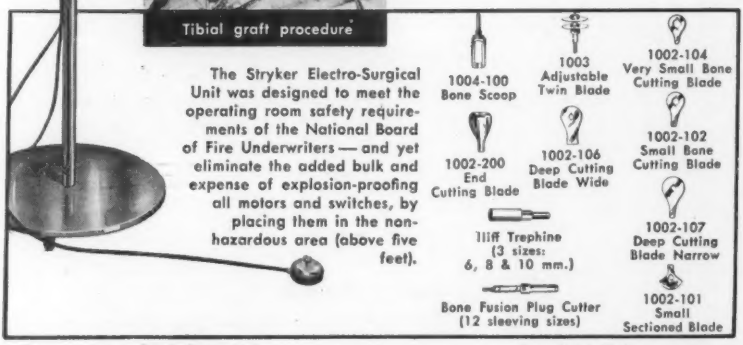

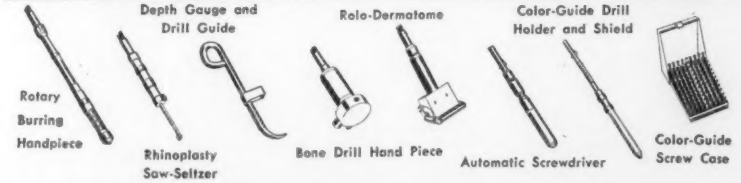

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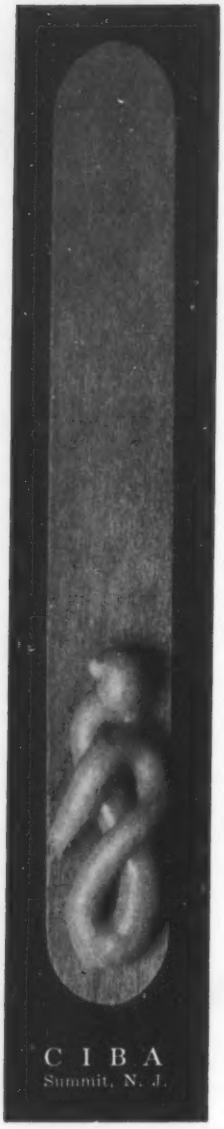

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